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ORIGINAL ARTICLES.

FRACTURE IN THE UPPER THIRD OF THE FEMUR EXCLUSIVE OF THE NECK.[1]

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FRACTURES in the upper third of the femur are infrequent. In the aged, violence to this part is likely to fracture the neck, while in active middle life dislocations are not infrequently the result of violence that might otherwise produce fracture in the shaft. To what extent the frequency is modified by other injuries I cannot say, but the statement is verified by statistics. In the tables of Agnew's *Surgery* I find an average of 5 cases a year during a series of years when the Pennsylvania Hospital was the principal hospital in the city. Supposing Philadelphia to have had an average population of 500,000 during these years, this would give an average of 1 case in every 100,000 inhabitants. Even this would give no mean experience were such an injury to come annually to one surgeon, but when we consider that every city of such dimensions has a score of surgeons, it is not improbable that some of them might pass their lives without ever treating a single case.

I have called attention to this fact to show, first, how improbable it is that any single surgeon, writer or teacher should ever obtain a large *personal* experience upon this subject; second, to call attention to the statement of the most reliable authors that complete success in the treatment of this injury is not to be hoped for; that permanent *weakness* is likely to follow the most skilful employment of the most approved methods; third, to inquire into the nature of the deformity, the cause of the permanent "weakness," and the correctness of the methods of treatment; and, finally, with the hope that I may be able to stimulate investigation of a subject that has hitherto baffled the skill of our experts, that by a better and fuller understanding of it we may attain the success in this quarter that has so fully crowned the surgeon's labors in other fracture injuries.

In the study of the deformity that is so common after fracture, we rely mainly on the material of pathological museums. He who takes the trouble to investigate the specimens there collected, will find that in by far the greatest number union has taken place with angular deformity. I have not seen a single case in which the long axis of the shaft has been perfectly preserved. In the great majority, that which the surgeon calls shortening, and which in the living is ascertained by comparison of surface measurements, is found in the pathological specimens to be a somewhat complicated affair. In some instances there will apparently be great shortening, with but little overlapping, the loss in length being due chiefly to angular union. In the majority of cases, however, overlapping, angular union, with rotation of the individual fragments, exists.

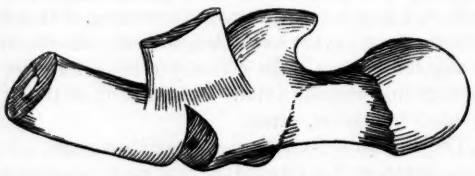
The angular deformity seems to follow a law. In most instances it is forward and outward, or a blending of both. I have seen two specimens in which the angle of union was directed backward. Authors sometimes speak of angular projection inward. I have seen no instance of it. In most specimens the lower end of the short upper fragment is in advance of the upper end of the lower fragment. If we seek among authors for an explanation of this, we find a universal consensus of opinion that it is due to the action of the ilio-trochanteric muscles, and chiefly to the ilio-psoas. To bring this matter up for discussion, I will imagine a fracture to have occurred in the shaft of the femur, two inches below the lesser trochanter. The fracture is oblique, and all bony continuity is severed. We have now two fragments, *entirely independent* of each other, each free to follow any dominant force. The question is, What directions will the individual fragments take? We first take up the upper fragment. Here we have a portion of bone four or five inches long. The head of the femur forms a part of it, hence it is free to move, since it lies in a smooth, well-lubricated socket. This fragment is held in the socket chiefly by atmospheric pressure. Its motion is that of perfect circumduction within a large area of motion. It enjoys adduction, abduction, and flexion to a great extent, but extension —*i. e.*, deflection backward beyond the long axis of the trunk—is checked by the capsular ligament. The fragment is therefore free to move inward, forward, and outward, but is checked in backward movement. The position it almost invariably assumes in pathological specimens is forward or outward, and the alleged agency is the psoas muscle.

Let us now take up the lower fragment. It has no bony connection with the upper fragment. It, too, is free to follow a dominant force, and when it is remembered that to it are attached the strong adductors, the most natural conclusion is that the upper

[1] Read by title at the meeting of the American Surgical Association, held in Washington, D. C., September, 1891.

end of the lower fragment must be drawn inward and upward toward the pelvis. *Certainly, from an anatomical standpoint the fragments would be widely separated.* On the contrary, we invariably find them together. For the solution of this mystery we turn to the anatomy of the parts. It must be remembered that the point of supposed fracture is below the lesser trochanter. No fracture can occur here that does not traverse the tendons of many powerful muscles. Let us suppose the tendon of the great gluteus to have been traversed. (Fig. 1.) In such a case there would

FIG. 1.

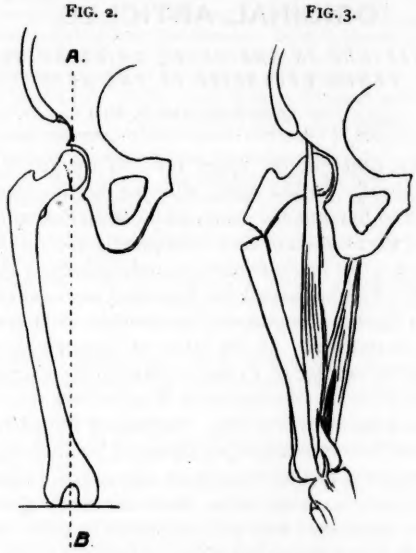


Represents the upper third of the femur, sawn through so as to preserve a part of the tendon of the gluteus maximus as a hinge for the fragments. The tendon is represented below the great trochanter.

be a strong tendon hinge between the fragments, which, to a certain degree, would prevent independent movement and at the same time would exert a powerful influence upon both fragments. Such a hinge or bond of union would compel both fragments to move together in obedience to a dominant power. When, therefore, in the problem stated, I represented the fragments as *entirely independent* of each other, I misrepresented the facts, and the conditions of the problem must be re-stated:

Given a complete oblique fracture of the femur, two inches below the lesser trochanter, the fragments are *bound together* by a strong tendon hinge. Query: What direction will the fragments take? If we go to the pathological museum, the first specimen we encounter may present angular deformity forward and outward, with possibly rotation of the upper fragment outward. For the satisfaction of those who believe that the dominant influence is the ilio-trochanteric group of muscles, I will say that I can produce this deformity with artificial muscles in a dissecting-room specimen. But the question arises: Can the action of this group of muscles account for all the phenomena presented in specimens? I answer: No!—not a fourth part of it. A second question then arises: Cannot the same deformity be produced in an entirely different manner? I answer that it can. The mechanism of locomotion favors a totally different theory. All the powerful muscles of locomotion that pass from the pelvis to the knee either run parallel with a line that passes through the hip-joint and knee-joint (Fig. 2, A, B), or they pass internal to it. In a certain sense, the femur may be represented as a bent bow, and the muscles as the string of the bow; so long as the bow maintains its integrity, these muscles cannot approximate the knee to the hip-joint. But the instant fracture takes place, the fragments, free to move, yet *bound together* by a strong,

FIG. 2. FIG. 3.



flexible tendon hinge, take the direction of least resistance, and that direction, when uncontrolled by external influences, is usually outward or forward. A study of Fig. 3, and of the anatomy of the part, will convince any unprejudiced mind that certain results are to be expected. First, the upper fragment is restrained from going backward by the ilio-femoral ligament; second, the curved shape of the femur and the bow-string principle of muscular action will tend powerfully to occasion, and be a guiding influence in the production of, both outward and forward displacement. Thus, in a dissecting-room specimen, with artificial tibio-pelvic muscles, I can produce the deformity that for centuries has been generally attributed to the ilio-trochanteric.

I have thus shown that the prevailing deformity can be produced artificially by forces dissimilar and widely separated. The question now arises: To which may it with greater justice be attributed? A contest of physical forces is involved; it is a question of mechanics, and, could all the elements of the problem be accurately stated, the mathematician could settle the question for us. As we cannot furnish exact data, we must content ourselves with approximation.

The problem remains: Which set of muscles is the more likely to produce the deformity—the ilio-trochanteric, or the tibio-pelvic? Or, in other

words: Which is the dominant fragment—the short upper, or the long lower one? Though apparently dissimilar, these are one and the same problem, and upon its satisfactory solution will hinge the choice of methods by the surgeon. In the solution of the problem, then, as to which set of muscles produces the deformity, we note, first, that all the ilio-trochanteric muscles (Fig. 4) act at a disadvantage. The

FIG. 4.

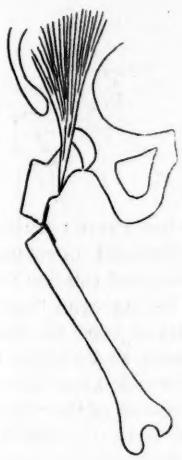
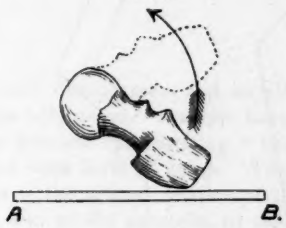


FIG. 5.

power acts on levers of the third class, and what increases the disadvantage is the fact that these muscles act upon the lever obliquely. Not so the tibio-pelvic muscles; their levers (after fracture, with a hinge) form what is known in mechanics as the "knee-joint," with unequal arms (Fig. 5), and the motive power is exerted to great advantage. Second, to produce the deformity, the ilio-trochanteric muscles must draw the short fragment upward with all the weight attached to the lower fragment, while the tibio-pelvic muscles can accomplish the same end by simply bending the "knee-joint" fracture. Third, if the upper fragment were drawn up by the psoas group, the lesser trochanter would be approximated to the pelvis in the direction of the contracted and shortened psoas muscle, and the fragment itself would be rotated outward. As a fact, in many specimens the upper fragment is so abducted that the distance of the lesser trochanter from the pelvis is increased, and the psoas muscle necessarily put upon the stretch. The truth of these statements can be demonstrated. First, as to rotation: If we take a normal femur, and lay it horizonally upon a table, with the anterior surface upward, it will rest as upon a tripod—*i. e.*, the two condyles will support it at one end, and the great trochanter at the other. (See Fig. 6, in which the great trochanter is represented as resting on a table, A, B. Note especially that the head of the femur lies an inch or more above the level of the table.) Now, in a specimen in the Gross cabinet, the upper fragment is so rotated inward that when the lower end rests on the condyles, the *head* rests on the table, and the trochanter is above the level of it. (See dotted line in Fig. 6.) If the normal femur is placed in the position of progression, the great trochanter lies posteriorly to the head. In the abnormal specimen referred to the trochanter lies in advance of the head. (See dotted outline, Fig. 6.) In this specimen, the trochanter minor lies posteriorly to the shaft when the femur is placed in the attitude of progression or support. This has placed the

FIG. 6.



tendon of the psoas muscle so strongly on the stretch that it has, through prolonged action, produced a groove on the *neck* of the femur. (See groove on neck in Fig. 6.) The presence of the groove is the result of the alteration in the axes of the fragments of the femur. It cannot be due to the attrition or pressure of the border of the acetabulum, for this is far out of reach, but must be due to pressure from the psoas tendon, which, in this perverted position in attempts at progression, is especially tense. Finally, if the upper fragment be regarded as dominant, then we have great difficulty in understanding how angular deformity, no matter how slight, directed backward, can occur. As already stated, I have seen this take place in two specimens. Authors even speak of angularity directed inward. On the theory that the long lower fragment is the dominant fragment, these exceptional positions can be explained. This, the long fragment, is the one the surgeon treats, and as the upper fragment is hinged to it, pressure unduly exerted may at times produce posterior or internal angularity.

Thus far I have endeavored to show that angular deformity would follow shortening—*i. e.*, the approximation of the knee-joint to the hip-joint after fracture of the shaft with *hinge* connection. I have now something both new and strange to offer. It is this:

Extension, no matter in what direction, will also produce anterior angular deformity. The principle on which this proposition rests is demonstrated as readily as is that already enunciated. Let any one take a card (Fig. 7), cut it so as to represent a carpenter's square; make a hole in each end; attach a weight to

one, and suspend it from a nail. So long as the integrity of the card is preserved, there will be an antagonism between the rectangular path of resistance and the direct path of the force represented by the weight (Fig. 7, A, B). Now cut the card, hinge it, and again apply the weight. The lower fragment being free to move, takes the path of the extending force,

FIG. 7.

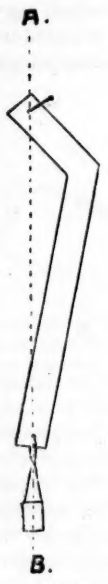


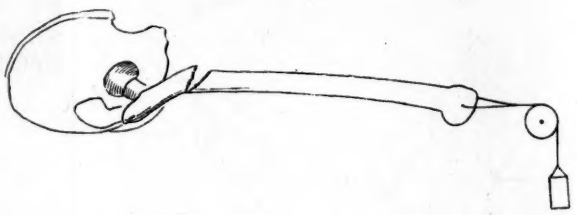
FIG. 8.

while its attachment to the upper fragment, not being in its axis, but extra-axial, so acts upon it that nail, hinge, and weight lie in the line of traction. (C, D, Fig. 8.) If the practical surgeon will stop a moment and compare the effect of traction *after* section with the effect *before* section, he will find that the card is distorted in both its parts. The lower fragment is turned away from its normal axis to conform to the line of traction. The lower end of the upper fragment turns abruptly from its normal bed and tilts inward. Thus, with a piece of cardboard the truth of the second proposition, that extension necessitates angularity, can be verified.

That which can be demonstrated with a card can with equal clearness he demonstrated upon a dissecting-room specimen. All that is needed is a shaft that arches forward, a head and neck obliquely attached to it, and a hinge between the fragments. Whether such a specimen be suspended, or extension be made horizontally, the angularity will be the same. Glancing at Figure 9, the first impulse would be to lift the lower fragment, and then make extension; but, I repeat, the same degree of deformity persists, and my proposition holds good that extension, no matter how exerted, must produce deformity.

DIAGNOSIS.—This requires us to locate the point of fracture and ascertain its characteristics—*i. e.*, whether oblique or transverse, etc., and if oblique, the direction of breakage. We must therefore ascertain the degree and extent of local damage;

FIG. 9.



whether the hinge is short or freely torn; whether the upper fragment is flexed, abducted, or rotated; the degree of flexion, abduction, and rotation; the cause of the malposition, and the agencies that oppose coaptation. It is necessary to know the direction of the axes of the fragments, and whether the proposed treatment corrects the existing deformity. It is necessary to estimate the nature of the "shortening," and without data to learn to what it is due. It is necessary to estimate the relative amount of shortening without a record of the conditions of the limbs before fracture. *It is necessary to do all this with a limb that we cannot span with our two hands, and through a padding of flesh from one to four inches thick!*

TREATMENT.—Erichsen, with a degree of candor that does him great credit, says that, adopt whatever plan we will, the result will not be satisfactory. That this is the experience of all surgeons, I dare not say, but I believe that few—very few, indeed—can dissent from it. An inquiry into the defects of treatment, therefore, should be an earnest, persistent study.

Probably the most extensively applied treatment of the day is horizontal extension. Its popularity consists in the fact that in no other way can extension be so readily and certainly applied, and upon the theory that by properly regulated extension the upper fragment can be drawn down and approximated to the lower fragment. The theory is based on faulty reasoning, and clinical results bear me out in my statement. Extension cannot draw down the upper fragment, even in a dissecting-room specimen. The reasons for this I have already given.

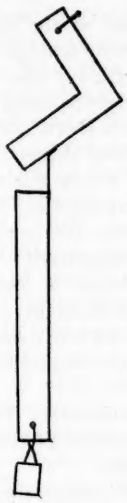
To overcome the tendency to anterior tilting of the upper fragment, the double inclined plane was devised. Its theory was to adjust the tractable lower fragment to the intractable upper one. Its defects are—first, that no adjustment can take place so long

as there is shortening; and, second, that all attempts to overcome shortening by extension necessitate angular deformity. The double inclined plane has no advantage whatever over horizontal extension, both being equally unscientific and disappointing.

Every method of treatment hitherto devised has been directed chiefly to the lower fragment. That

FIG. 10.

FIG. 11.

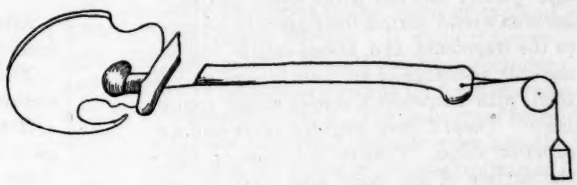


such a course has done all for human suffering that it can possibly do is probably beyond dispute. That such a course has produced untold deformities is equally as true, and equally as demonstrable. If we glance at Figs. 10 and 11, we note that the instant that fracture takes place and all parts feel the influence of the extending weight, we find both fragments diverted from the normal position, and the reason is that the weight through the hinge acts only upon the upper fragment. It should be especially noted that while the upper fragment (Fig. 10) seems to be greatly diverted, the lower is equally so.

The length of the hinge or bond of union between the fragments should be carefully noted. If it be a close, short hinge, it will have more control over the upper fragment than if it be a long, loose hinge. Note particularly how much more the upper fragment is tilted in Fig. 11 than in Fig. 10. This diagram (Fig. 11) should be most suggestive to the practical surgeon with a recent fracture to deal with. With the upper fragment tilted up, no matter from what cause, with strong, contracted ilio-trochanteric muscles, goaded by pain, and now acting at the greatest possible advantage upon the short, flexed upper fragment, the surgeon attempts to draw it down by extension! (Fig. 12.) Extension—and through what medium, I ask? Not upon the fragment itself, because the fracture forbids this, but *extension solely through a loose ligamentous extra-axial hinge!* As well attempt to stay the shadow of a passing cloud!

A study of the effect of traction in both these figures reveals two important facts: first, that both fragments are diverted from their normal axes; second, that the control of the upper fragment will vary with the length of the bond or hinge. The

FIG. 12.



degree of axial displacement and its ulterior effect must be especially noted. Authors have from very early times ascribed the resulting "weakness" in the limb to a weak bond of union. The real cause of weakness is the altered relation of the head to the socket, and of the condyles to the tibia. In Fig. 13 I have, by means of a cross-bar at the lower extremity, represented the plane of the articulation

FIG. 13.

FIG. 14.

In Figs. 13 and 14 the cross-bar at the bottom represents the transverse axis of the knee-joint. After fracture that axis is greatly distorted when angular union takes place (Fig. 14).

at the knee-joint. Now contrast the altered plane of Fig. 14, after fracture, with that of Fig. 13. Could a person walk on such a limb? Experience and a knowledge of the laws of progression answer, No. If in such a limb the foot is placed in the attitude for locomotion, the head of the femur will be in a most unnatural position, while if the head is placed normally in its socket, the foot cannot bear the weight of the body.

I have condemned the various methods of treatment as unscientific and incapable of yielding satisfactory results. I have condemned them because no method of treatment hitherto devised is capable of controlling the upper fragment, and only the treatment that begins with fixation of the upper fragment has a rational basis for success.

The typical treatment, the only one that can insure perfect success, is the open method. A free incision would permit the fingers to be passed down to the fragments, and actual tactile impressions are the only assurance of accurate reposition. Fixation, then, with carpenter's screws would insure a useful limb. These I have used for years and know their superior value. I drive the head of the screw to the surface of the bone and leave it undisturbed until it is forced from its bed into the surrounding tissues by reparative changes in the bone. This usually occurs in the course of two months. Then I pick it out and the sinus soon heals. A less heroic, but far less certain and less effective plan, would be to thrust a strong, sharp-pointed awl through the skin to the femur, and with this held down, the lower fragment could be adjusted, a firm pad placed over the upper fragment, and the whole placed in a plaster-of-Paris splint. The temporary use of a steel pin would not increase the danger to the patient, but the pin to be of any service must be kept in place for weeks. That this would be without danger, I am not prepared to say.

In justification of the open method, I would cite the numerous cases of osteotomy performed to correct deformity in bone, that can now be referred to. Osteotomy to correct angular deformity is still sufficiently frequent, not only to justify the operation, but to guarantee its safety. A Swede came under my care who, though thirty weeks had passed since a fracture in the upper third of the femur had taken place, was still unable to walk without a cane. Angular deformity, with shortening of less than half an inch, was the cause of the "weakness." I cut down upon the bone at the point of juncture, sawed out a V-shaped section, secured the fragments with a screw, and the man recovered to earn full wages at hard, manual labor.

In illustration of the inefficiency of traction to bring down the upper fragment, and of the necessity of fixation of the fragments by means of a screw or some permanent method, I will cite a case of compound fracture of the upper third of the femur, that was treated at a Philadelphia hospital. Dr. R——, the house-surgeon, first made extension, but found that it did not influence the upper fragment. Then passing his fingers into the wound, he held the upper fragment while the lower was approximated to it by extension and manipulation, and finished the dressing with a strong, superimposed pad. So long as his fingers were upon the fragment he secured perfect approximation, but this he could not perpetuate by means of splints, and union took place with an inch of shortening and marked antero-lateral angularity. The splint used was the inclined plane.

SUMMARY.

After fracture of the shaft, the fragments are bound together by a hinge.

The hinge will be short if the vulnerating force was only sufficient to break the bone.

If the hinge is short, overlapping can only occur to a very limited degree. In all such cases the "shortening" will be due to angular displacement.

If the vulnerating force is greater than necessary to merely fracture the bone, the unexpended force will tear the hinge freely.

When the hinge is loose, overlapping, with or without angular deformity, is possible.

The shorter the hinge the greater will be the control of the upper fragment, through the agency of the lower.

Traction on the lower fragment under all circumstances is incapable of restoring the long axes of the broken bone.

If the hinge is short, traction will draw down the upper fragment, but cannot efface the anterior angular tendency.

If the hinge is long (Fig. 12), traction will exert but little influence upon the upper fragment.

Traction in the oblique direction has no advantage over horizontal extension.

The so-called "weakness" after fracture of the femur is not due to deficient bone-repair.

"Weakness" is greatest when due to angular deformity with rotation of fragments.

Angular deformity, with rotation of fragments, compels both hip and knee to assume abnormal relations to the trunk.

Shortening, due to overlapping, *without* angular deformity or rotation of fragments, is no barrier to heavy, manual labor.

Treatment directed to the lower fragment is the probable agency in causing rotation in the lower fragment.

No surface treatment can *insure* a useful limb.

Osteotomy has corrected many a faulty union after months of waste time.

The conversion of a sealed (simple) fracture into an exposed (compound) one offers the only possible means for accurate diagnosis, and the only possible method of rational treatment.

Patients and surgeons who stop short of this procedure must compromise with best results.

1604 SPRUCE STREET.

LAPAROTOMY FOR INTESTINAL PERFORATION IN TYPHOID FEVER.

With the Report of a Successful Case.

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Shall laparotomy be performed for intestinal perforation in typhoid fever? This is a question that, in the seven and a half years that have elapsed since Leyden first answered it affirmatively (May 24, 1884), has elicited a variety of affirmative and negative,[1] decided and qualified, confident and doubtful, bold and timorous replies from both physicians and surgeons, first in Germany and afterward in England, Ireland, America, France, Japan, Australia, and Russia. It is strange, nevertheless, that a question involving the only promise of help for 5.7 per cent. of all those dying of typhoid fever[2] should not have excited even more interest and discussion. The decision of the question demands a preliminary reply to the question of the efficacy of other modes of treatment. This inquiry is the more easily conducted because the indisputable spontaneous recoveries after perforation reported by Murchison, Griesinger, Buhl, and others, are so exceedingly rare that they are reckoned among the curiosities of our observations, and because no medical writer, so far as can be ascertained, has offered the least ground for hope from the employment of medical treatment when this pathological accident has occurred. Louis,[3] who has recently studied this point, refers to Ziemssen (1888), Spilmann, and Garszinotty and Jaccoud as authorities, and it would be easy but superfluous to increase the number of distinguished and unanimous observers by a reference to American and English authors. The opium treatment of peritonitis has of late years been so freely combated by advocates of flushing, drainage, and free catharsis that it will soon be definitely reckoned among the relics of medical medievalism.

The most important objections raised against laparotomy in typhoid intestinal perforations are that the patient's tissues are degenerated, offering unfavorable conditions for healing, and that the typhoid fever is still in progress and must be recovered from, in addition to the shock and traumatism of the operation, and in addition to the peritonitis. That healing takes place in the ulcerated bowel when sutured is easily proved by the post-mortem examinations made in the fatal cases operated upon, as well as by the mere fact of recovery in the cases that have pursued a favorable course. That the operation itself adds to the danger by consuming the patient's limited stock of vital energy through shock, traumatism, and the damage done by anesthetics is not to be gainsaid. But I maintain that laparotomy, performed as I shall describe, does not necessarily kill by itself, and that it is not more dangerous *per se* than other operations occasionally and successfully performed in the course of typhoid fever and other febrile diseases. It is not the operation that destroys life; it is the violent suppurative and putrefactive peritonitis set up by the feces poured out into the abdominal cavity. The quantity of feces escaping is the less important, because even a small amount is sufficient, by virtue of the multiplication of the mixed varieties of bacteria in the exudate, to fill the belly in a few hours with quarts of stinking, virulent pus. A remedy for perforative peritonitis in typhoid fever, outside of mechanical removal of the feces and gas from the abdominal cavity, mechanical closure of the hole through which it escaped, and provision for constant mechanical removal of the peritonitis-exudate, is, in the present state of our knowledge, rationally inconceivable.

Shall laparotomy be performed in all cases? This inquiry, in its categorical form, admits easily of a negative reply. It is only when we come to set down hard and fast rules for discrimination that differences of opinion arise. Thus, in a paper discussing this point before the American Surgical Association in 1888, J. Ewing Mears drew the conclusion that surgical interference is not justifiable when the fever is at its height; and, secondly, that in mild cases, when perforation occurs at the end of the third week, laparotomy may be performed. With these conclusions Dr. B. A. Watson agreed. Dr. Bontecou, who had twice operated, dissented, and held that the indication for laparotomy is imperative.

To be brief, however, the horns of the dilemma are—the one that the patient will almost certainly not recover without the operation, the other that the patient may recover with the operation. We are therefore not any longer in a position to reject laparotomy, except when the patient is actually in a moribund state. Considerations of policy are to be set aside by placing the responsibility upon the shoulders of the patient or his friends, while the thought of a broken record of recoveries from laparotomy is unworthy of honorable consideration. Hoelscher,[1] who studied the records of 2000 lethal cases of typhoid in the Munich Hospital, states that no deaths from perforative peritonitis are recorded as occurring in the first two weeks of the disease. Hence all the perforations occur either at the height of the disease (in the third week) or during deferves-

[1] Potain: Gaz. des Hôpitaux, 1891, lxiv. 621.

[2] Hoelscher (Münchener med. Woch., 1891, xxxviii. 43) found 114 deaths from perforation in 2000 deaths from typhoid fever.

[3] Progrès Médical, 1890, 2e sér., xii. 572.

[1] Münchener med. Woch., January, 1891, p. 43.

cence. We may therefore count that in case of recovery from the peritonitis the patient in some of the cases will have to pass through one-half of the entire course of the disease. The patient whose recovery is here recorded went through a typical course of typhoid fever, which ended two and a half weeks after the operation.

Hence it would seem that the stage of the disease, though perhaps slightly modifying the chances of recovery, does not in the least degree alter the responsibility of the physician. If the perforation occurs early, the patient's strength to withstand the peritonitis has not been exhausted by the disease; while if the accident takes place later, the patient, when he has survived the peritonitis, has but little of the typhoid to combat.

Collapse is a contra-indication to operation only when it is apparent that the condition itself is the immediate forerunner of death. Reaction must usually be sought before the operation is begun; but we must remember that hot flushing of the abdomen will often revive the patient.

The physician's duty, when facing such convictions, is manifestly clear. In taking charge of every case of typhoid fever, he is imperatively obliged by conscience to be ready to assume or to transfer to another the responsibility of laparotomy in case of perforation—just as in cases of croup he must, if necessity arise, be ready to mechanically admit air into the lungs. Furthermore, in view of the fact that early laparotomy may cut short the peritonitis, it is equally his duty in every case to inform the nurse of the symptoms of perforation, in order that, should the accident occur, he may be called instantly.

The diagnosis of intestinal perforation in typhoid fever may be very easy or very difficult. We have not time to discuss it fully; it must suffice to mention the chief symptoms that occur in typical cases. The presumptive evidence is in favor of a diagnosis of this accident when typhoid fever can be clearly diagnosticated and positive symptoms of perforation are present. Sudden, violent, abdominal pain, usually in the ileo-cecal region, is more conclusively diagnostic when it is of a cutting or tearing character, and when violent peristalsis, imprudence in diet, or improper posture has given an opportunity for local, mechanical injury. Examination within the first two hours will usually disclose tenderness as one of the chief distinctive features. But absolute disappearance of liver-dulness is to be regarded as a more crucial test, indicating the presence of free gas in the peritoneal cavity. This sign may be absent on account of the fact that only fluid matter has escaped from the bowel, or because, though gas has escaped, the abdominal walls are not separated from the liver on account of old adhesions. If much free fluid has escaped, or if peritonitis-exudate is present in quantity, it may be demonstrated by percussion, with the patient in different positions. Tympanites, if not already present, will soon follow the onset of peritonitis. The drawn, anxious face of the patient is covered with cold perspiration, and, as a rule, further evidences of shock are furnished by cold extremities, subnormal temperature, and a small, rapid pulse. When reaction takes place, the temperature rises, and the pulse increases in frequency, becoming, at the same time, quick and wiry. The signs of peritonitis soon increase in number, the knees are drawn up, the abdominal walls are tense, the tenderness and pain are great, and vomiting, often stercoraceous, is usually observed. Rarer symptoms are sometimes noted. Thus, Tschudnowsky heard in one case, on auscultation, a gurgling, amphoric murmur, synchronous with respiration, which was thought during the life of the patient and was found at the autopsy to be due to gas and fluid running in and out of the opening.

It is most important to make a diagnosis before peritonitis has become violent and general, since every minute of delay adds to the danger to life. And I would especially insist that while the presence of general peritonitis increases our obligation to operate, it is unnecessary and wrong to wait for symptoms of inflammation before opening the abdomen; for absorption of the intestinal contents through the peritoneum is probably alone sufficient to destroy life. It should further be borne in mind that while preparations are being made for laparotomy, under the most favorable circumstances requiring from thirty to sixty minutes, the patient may begin to exhibit more positive symptoms of the occurrence of the accident.

CASE I.—Miss S., aged thirty-one, height five feet six inches, weight one hundred and forty pounds, was seen for the first time by Dr. John Fisher, June 24, 1891. The patient, who had previously enjoyed perfect health, had been ailing with headache and chilly sensations for a week. Two days previously she had had slight chilly sensations; the temperature at the time of the first visit was 103°, the pulse 112 per minute, and the tongue dry. A diagnosis of typhoid fever was made. Small doses of antipyrin relieved the headache, and slightly reduced the temperature. The patient was kept on fluid diet. On the sixteenth day the temperature seemed normal, and at the end of the third week she began attending to light domestic duties. After having been apparently devoid of fever for fourteen days, the thermometer not being used, she had a chilly sensation on July 17th. On the following day, Dr. Fisher found a temperature of 104°, a pulse of 120 per minute, severe headache, and much prostration. Dr. Fisher diagnosticated[1] a relapse of

[1] There was no evidence of dysentery or other bowel trouble.

typhoid fever, and instituted the same treatment as before. On the seventh day of the supposed relapse, the bowels not having moved for thirty-six hours, an enema of warm water was given. This, in a few hours, was followed by two passages and by a third at four o'clock A.M. of the eighth day. At five o'clock she was attacked suddenly with great pain in the ileo-cecal region, followed by a cold sweat, coldness of the extremities, and an excessively pinched and anxious expression of countenance. Dr. Fisher saw the patient at seven o'clock, and found a temperature of 105.5°, with a quick, wiry pulse of 126. The pain almost ceased soon afterward, without the administration of anodynes. Dr. Fisher recognized the symptoms as those of intestinal perforation. On seeing the patient with Dr. Fisher at nine o'clock, I confirmed his diagnosis by consideration of the following points:

First. The history of the case pointed indubitably to the existence of typhoid fever.

Second. The mechanical explanation of a perforation was supplied by the fact that active peristalsis had been excited by the enema.

Third. The symptoms of anxiety, pain, and shock were typical.

Fourth. The objective symptoms already noted were supplemented at that time (four hours after the accident) by a rising temperature (106°), and an increasing pulse-rate (132), plus the typical signs of peritonitis, viz., tympanites, tension of the abdominal muscles, and tenderness upon pressure over the ileo-cecal region.

On account of the lack of the friends' consent, the operation could not be begun until 2.40 P.M., when I opened the abdomen. The incision, in the median line below the umbilicus, opened the peritoneum through an extent of about two and a half inches, which afforded ample room. No gas escaped (the liver-dulness had not been altered), but more than a pint of fluid feces and exudate, mixed with flocculi of lymph, was removed. On gently pulling out coils of small intestine in the direction of the ileo-cecal valve, numerous ulcers—one or two of them almost perforating—were seen.[1] Flocculi of lymph over the surface of the inflamed bowels indicated the points where the peritonitis was oldest and most violent. That the peritonitis was general was demonstrated by the facts that all the coils seen were injected and dull-looking, and that the fecal matter was freely circulating in the peritoneal sac. When two or three coils had been drawn up and examined, the opening was found. It was irregularly circular, and about two millimeters in diameter. While the coil was held up (it being the only part of the intestine now exposed), the feces were carefully sponged off with sterilized gauze, and the opening closed with three longitudinal rows of interrupted Lembert sutures. The gut walls were so thick and so brittle from edema that three rows were thought necessary to insure strength. I did not look for other perforations in this case, because it seemed that the woman had a remote chance of recovery if she could be quickly put to bed. Consequently, not more than two and one-half feet of intestine altogether were exposed. The abdominal sac was now thoroughly and carefully washed out with nearly half a wash-boilerful of hot, sterilized water. The omentum was carefully drawn over the injured coil of intestine, and sutured to the mesentery. A large drainage-tube was passed to Douglas's cul-de-sac, and the remainder of the abdominal wound closed. The patient was much exhausted at the close of the operation, but was not in collapse, although the pulse was small and rapid, and the temperature high. On the following morning, at 9 A.M., the abdomen was enormously distended, and everywhere tender, and the patient looked moribund. Enemas of an ounce each of magnesium sulphate, glycerin, and water had been given three times, beginning two hours after the operation, once with a double dose, without effect. At eleven o'clock, however, the bowels began to move, and she had ten or twelve watery passages, after which she began to improve. The tympanites diminished, the pulse improved, and the amount of fluid aspirated from the tube was much diminished. The temperature remained at 103° for four or five days, when the symptoms of peritonitis began to disappear. The tube being withdrawn, the wound healed, and the symptoms of typhoid, running a normal course by a typical defervescence, ended in two and one-half weeks. The patient is now enjoying perfect health.

CASE II.—A. S., Bohemian, twenty-nine years of age, entered Cook County Hospital, June 12, 1891. She was stupid and dull, presenting all the classical symptoms of typhoid. No previous history could be obtained. The course of the disease was typical and regular until the morning of June 28th, when the patient got up and walked unobserved to the bath-room. She was taken back to her bed and immediately seemed to be in great pain. When seen by the house-physician the tense, rigid, distended abdomen, with loss of liver-dulness, pointed to perforation. Her general condition was that of collapse, the pulse being rapid and thread-like, and the skin cold and clammy. On being transferred to the surgical department I concurred in the diagnosis and opened the abdomen, seven hours after the perforation occurred. The peritoneal sac was found filled with thin, liquid feculent matter. The patient becoming rapidly worse despite stimulation, the operation was not completed. The patient died a few minutes later. At the autopsy an oval perforation was found in the ileum, 18 inches above the *caput coli*. The visceral peritoneum around the perforation was adherent for three-fourths of its circumference, the remaining portion having probably been loosened by the traction occasioned in walking. A second ulcer was found opening into a small abscess-cavity within the peritoneum. Adhesions shut it off completely from the general serous sac.

CASE III.—John Connell, thirty-five years of age, walked into the Cook County Hospital, October 30th, at 5 P.M. His temperature was 102°; pulse

[1] These ulcers were so numerous and so characteristic, as seen through the translucent bowel, that they must have been of comparatively long standing. I am strongly of the opinion that the temperature, especially of afternoons, had not been normal before the apparent relapse.

120, being small, soft, and irregular. The patient looked pale and haggard; his eyes were sunken; his abdomen was moderately distended, rigid, and extremely sensitive to pressure all over. His mind was dull. A diagnosis of probable typhoid fever was made. Fourteen hours later it was found that the liver-dulness was absent, and as the patient was in collapse a diagnosis of perforation was made. The patient being transferred to my service, the abdomen was opened and a perforating ulcer found about 12 inches above the ileo-cecal valve. The opening was closed by a double row of Lembert sutures. The abdominal cavity was filled with fluid feces and exudate. The peritoneal sac having been washed out and drained, the patient was put to bed in fair condition and lived fourteen hours. The autopsy showed general peritonitis. The perforation had been completely closed.

The *statistics* of the operation are as follows:

1884 (Sept.). Mikulicz: 4 cases, with one recovery, though unfortunately the diagnosis is doubtful.

1885. Lücke: resection, death.

1886. Escher: 1 case, recovery; but the case is regarded by Louis as one of appendicitis.

1886. Greig Smith: 1 case, doubtful diagnosis, death.

1886. Bartleet: 1 case, death.

1887. Bontecou: 1 case, death.

1887. Morton: 1 case, death.

1889. Bontecou: 1 case, death.

1889. Senn: volvulus and perforation, 1 case, death.

1889. Hahn: 2 cases, death.

1890. Kimura: 1 case, death.

To these 15 cases are to be added that of Taylor,[1] 1891, and the three reported here, making in all 19 recorded laparotomies, with four recoveries. The case of recovery of Mikulicz was stated by the operator to be of doubtful diagnosis. That of Escher was probably a perforation from appendicitis. Taylor's case should not be counted, as it was operated upon ten days after the onset of symptoms, and is, furthermore, not demonstrated to have been a typhoid perforation. If we include all the doubtful cases, the present recovery is, as appears from the literature at command, the seventeenth case and the fourth recovery. If we include only closely diagnosticated cases it is the twelfth case and the first recovery.

The *technique* of the operation, which has for its object three chief ends—closure of the perforation, cleansing of the peritoneum, and the institution of drainage—must be modified to meet the obvious primary considerations of minimum consumption of time, minimum manipulation of intestines, and minimum administration of anesthetics, together with maximum accuracy in closing the perforation and maximum care in the toilet of the peritoneum. The incision should be median, should lie at first below the umbilicus, and should at first be from two to four inches long, depending upon the thickness of the abdominal walls. If found desirable, its length may at any time be increased with the scissors. In the majority of instances the perforation is within two or three feet of the cecum, usually in the ileum, rarely in the colon. The perforation should first be sought by inspecting the presenting coils of the small intestine. In some cases (in two of my own) the perforation was found in this way without drawing out more than two feet of intestine. After examining these few coils, the appendix and small intestine, beginning at the cecum, must be carefully and completely examined on account of the great probability of finding the opening in one of them. The coils must be carefully drawn out with the finger tips, all stretching and forcible dragging being specially avoided for fear of tearing new holes through the ulcerated walls. When a small coil has been examined, it should be quickly and gently replaced. It must be remembered that quantities of "plastic lymph" usually cover the bowels where the peritonitis is oldest. They will often guide the operator to the opening, sometimes obviating the necessity of a systematic search. Occasionally the perforation will be found wholly or partly hidden by such a mass. If the operator has begun at the cecum he should continue to search successive coils of the small bowel until the perforation is found, or until the duodenum is reached. The colon may next be examined. Success in this operation will, however, rarely be obtained when so much manipulation has been resorted to. But, fortunately, it will be but very rarely required. The use of the test for perforation by gas-insufflation will not be resorted to, because in peritonitis with paretic bowel-walls the gas is difficult to remove; because it may itself make openings in the bowel, and because the intense artificial tympanites may interfere with respiration.

Once the perforation has been found, its treatment demands much care. In one recorded case, that of Lücke, the intestine was resected, but this can but rarely be required, since as a rule the perforation is only one or two millimeters in transverse diameter. It is indicated when the bowel is extensively ulcerated so that stitching is impossible. Orth tells us that the ulcers are almost always on the free border of the intestine. In this case the gut should be held up by an assistant and the opening quickly closed by a double row of interrupted Lembert sutures. The ulcer should not be trimmed. It does no good to trim it, because the frayed edges are turned inward and the trimming is a disadvantage as it takes time. The line of sutures should

[1] Lancet, 1890, i. 961.

be parallel with the long axis of the bowel. Interrupted sutures must be used because the intestinal walls are so edematous and soft that continuous sutures tear out in places, loosening the whole line.

When the first opening has been satisfactorily closed, shall we search for another? It would be erroneous to make a protracted search for a second opening, if one had been fortunately found, since, as a rule, only one opening exists. Still, as most perforations occur near the ileo-cecal valve, it would be advisable to examine the bowel near the cecum, especially if the first opening, by occurring in that region, rendered easy such an exploration.

The perforation having been closed, the coil of intestine in which it occurred is gently held by an assistant at one end of the wound until the peritoneal sac is carefully cleansed. This should be done preferably by means of a thick stream of sterilized salt solution, six-tenths of 1 per cent., at a temperature of from 105° to 112°. In emergencies boiled water will answer. The wound-edges should be held up and the abdomen freely and frequently flushed until the washings are clean. This part of the work is essential and can be accorded as much time as is necessary, especially since the action of the hot solution is stimulating and tends to prevent shock.

The coil of bowel that has been held by the assistant during the irrigation is now again examined to see that the stitches are in place and that the lumen of the tube is not dangerously diminished. The omentum is now drawn down over the coil of intestine and without tension fastened to the mesentery. Dr. F. B. Robinson has informed me that in his experiments on dogs he found that, unless the omentum is fastened by two sutures placed at its margin, it has a tendency to roll up. The hint may be taken in the disposal of the omentum over the coil of intestine in which the perforation has occurred.

Drainage is best secured by means of a large glass tube passed to the lowest part of the pelvis. The outer end of the tube is so arranged that it can, without disturbing the patient, be easily kept dry by suction every half hour. The nurse must be carefully instructed how to perform this important duty.

If the patient is not in a state of collapse, a rectal injection of an ounce each of magnesium sulphate, glycerin, and water should be given to prevent peritoneal exudation by producing a few watery passages.

The anesthetic should be chloroform, on account of its rapid, easy action, its slightly detrimental effect upon the lungs and kidneys, and its tendency to excite but little vomiting. Administered to full anesthesia until the perforation is found, it may be given in less quantity while the intestine is being sutured. A skilful assistant will, after giving a hypodermatic dose of morphine, conduct the entire administration with only a few drams of the drug, watching the steps of the operation to see when the different degrees of anesthesia are required.

The relation of the after-effect of the operation to the typhoid fever must be looked upon as a subject for serious study. Yet the operative danger is deeply overshadowed by that of the peritonitis, which we must expect to prove fatal in very many cases, even when rational treatment has been carried out. It is only by rapid, skilful, but above all by very early interference, that we can hope to materially reduce the death-rate from perforative peritonitis in typhoid fever.

Conclusions.

1. There is no rational treatment for perforation in the course of typhoid fever, except laparotomy.
2. The indication for laparotomy when perforation occurs in typhoid fever is imperative.
3. The only contra-indication is a moribund condition of the patient.
4. Collapse is often at least temporarily relievable by hot peritoneal flushing.
5. The stage of the fever is not to be considered as an indication or as a contra-indication for laparotomy.
6. The severity of the typhoid fever is alone not a contra-indication.
7. Early laparotomy offers the most hope.
8. The symptoms of peritonitis should not be awaited before operating.
9. In taking charge of all typhoid fever patients, it is the physician's duty to be ready, in case of perforation, to perform laparotomy.
10. The published statistics of laparotomy for this condition are strongly in favor of operation.
11. The technique, though not complicated, demands much thoughtfulness, acquired dexterity, great rapidity, and thoroughness.

ERYSIPELAS AND ACUTE SUPPURATION IN THE MIDDLE EAR.[1]

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IN a thorough search of the literature of the subject at my command I can find but little mention of erysipelas in connection with ear disease. With the exception of two "traumatic" cases, reported by Roosa,[2] occurring after a mastoid operation (which were probably due to this procedure), and that of dermal erysipelas of the auricles, nothing can be found. The latter complication is not

[1] Read before the Rock River Medical Society at Neenah, Wis., July 28, 1891.

[2] Roosa, St. John: Dis. of the Ear, 1885, pp. 521, 522.

uncommon, cases being sometimes seen in general practice.

The text-books generally speak of an extension of the cutaneous lesion to the larynx, and one of them[1] refers to the implication of the pharynx. Such authors as Bosworth,[2] Seiler,[3] and Gottstein,[4] make no mention of its arising in the pharynx or nasal membranes, and all works that I have consulted are silent upon its extension to or implication of the middle ear. Charles W. Allen,[5] in an able article upon the treatment of the disease and a report of fifty cases, does not refer to any of these complications. This writer states: "It is probable that every case of facial erysipelas arises from some local solution of continuity in the skin or adjacent mucous membranes. There is probably no such thing as idiopathic erysipelas. We simply call some cases 'idiopathic' or 'genuine' when we fail to find the point where the micrococci have entered." Now, the following cases would ordinarily be termed "idiopathic," but in the first the mycotic process probably originated in the pharyngeal walls, as a result of an operation; in the last case an initial lesion may have been caused by the act of picking the nose; and in the second, possibly the point of entrance was an abrasion from a pipe or cigar, as the patient acknowledged that he was a heavy smoker, and the disease began on the mucous surface of the lower lip:

CASE I.—A bookkeeper, twenty-nine years of age, applied to me for treatment of his left ear, February 20, 1890. I found the tympanum filled with a serous secretion, which could be easily cleared away by inflation. After a few treatments he was discharged as cured, but again appeared April 29th, with pharyngitis and slight earache. A post-pharyngeal abscess was diagnosticated and incised, liberating three or four grams of pus. The pharyngeal tonsil, being hypertrophied, was subsequently removed by guillotine-forceps. Some relief was obtained by the operation, but two weeks later he returned with earache, with the drum red and inflamed. On the next day the membrane was bulging, and I performed paracentesis, releasing bloody pus from the cavity of the tympanum. The pain remained so intense that an opiate was administered, the patient ordered to bed, and leeches applied in front of the tragus. On examination of the pharynx its walls were found greatly tumefied, and of a dusky-red color. Ice was given the patient to suck, and boric acid and cocaine spray applied to the pharynx. The ear was dressed antiseptically.

On the morrow the left nasal cavity was swollen shut, the temperature 103° at my morning visit, and 105° in the evening; pulse 101. Erysipelas was suspected, as the anterior nares were dusky-red, and in the morning, when Dr. W. H. Washburn (the family physician) was called, the diagnosis was corroborated. The roseola now spread from the nostril as a focus over the entire face, swelling the eyelids, extending to the scalp, neck, and the auricles of both sides, within four days. At this time the temperature ranged from 102° to 106°, and the pulse was weak and rapid. The man retained little on his stomach, was delirious, at times having maniacal excitement and at others being almost comatose. Several consultations were held with other physicians, but the supportive and stimulant treatment instituted by the family physician was continued without much change. The ear was cleansed regularly, and dressed with boric acid powder. On the fourth day the pus was very thick and offensive, and continued so for a week or more. May 20th was the critical day, the fever suddenly abating, leaving the patient very weak. One relapse of erysipelas occurred from the 25th to the 29th. The patient gradually rallied, the otitis pursuing the usual course. The ear stopped discharging at the end of the sixth week, and the perforation closed. On June 28th the watch could be heard at 100 cm. from the ear (normal, 150 cm.) Since that time the patient has had several attacks of aural catarrh and pharyngitis, but no suppurative otitis.

CASE II.—A mill-owner, fifty-three years of age, was seen in consultation with Dr. W. F. Miller, January 5, 1891. This was on the sixth day of an attack of facial erysipelas, that began on the mucous membrane of the lower lip. Two days previously earache had set in, and the pain was intense. The pharynx was inflamed, and the nasal passages almost occluded. The erysipelas involved the entire side of the face, and had been on the scalp, but had somewhat receded. The drum ruptured spontaneously, and some pus was discharged. The pain continued, and the mastoid became red and tender.

A small perforation could be seen in the membrana flaccida. As the patient was suffering from retention symptoms I made a free paracentesis in the membrana vibrans, which let out considerable thick secretion. The pain still continued, and morphine was given and leeches applied. Cocaine drops were ordered for the ear. The secretion remained thick and creamy for over a week. Antiseptic treatment was advised and used by the attendant throughout the case, and four weeks after the paracentesis I was informed by the physician that the patient had left town for his home in Montana, with the ear apparently well. The attack of erysipelas ended by lysis, with no relapses.

CASE III.—A widow, twenty-five years of age, was seen in consultation with Dr. T. H. Hay, April 11, 1890. She was convalescing from a severe attack of facial erysipelas, which had already relapsed once. The disease had arisen at the right nostril, and had spread over the face and neck of the same side. There had been a case of erysipelas in the neighborhood which the patient had visited a few days before her present illness. She acknowledged the habit of "picking" the nose. On examination

[1] Roberts, F. T.: Practice of Medicine, 1884, p. 184.
[2] Bosworth, F. R.: Dis. of the Nose and Throat, vol. i., 1891.
[3] Seiler, Carl: Dis. of the Throat and Nasal Cavities, 1889.
[4] Gottstein, J.: Die Krankheiten des Kehlkopfes, Wien, 1888.
[5] Allen, Chas. W.: "Treatment of Erysipelas," Amer. Journ. of the Med. Sciences, July, 1891.

the nasal passages were found swollen and the pharynx reddened. There had been sore-throat for some months; ear-trouble had appeared one week previously to my visit, the drumhead bursting spontaneously, setting free a large quantity of pus, but not giving much relief from the intense pain. The discharge was thick and profuse, and the mastoid was tender. Leeches and antiseptic treatment were used in the treatment of the ear. No erysipelas was seen at this time on the skin, although the temperature was from 100° to 103°, and the pulse rapid and feeble. A few days later the tip of the nose was again red and swollen. The patch gradually extended over the cheek, but at the end of four days had disappeared. The temperature then dropped to the normal. When the patient was seen May 17th the hearing-distance for the affected ear was normal, and the drumhead restored.

It will be noted that the three cases exhibited the ear complication at the beginning, middle, and end, respectively, of the erysipelatous attack. In all, the inflammation was very violent, differing from the ordinary purulent process in severity, and in that the discharge was thick and creamy from the first, maintaining its consistency to the end. The patients were all dangerously ill, and had excessive pain, which was not readily relieved. The secretion of Case I. was examined under the microscope, which revealed an abundance of pus-corpuscles with many epithelial masses. Under a higher power many cocci were visible. In my mind there is no doubt but that the suppurative complication was in each instance a true erysipelatous inflammation at the beginning, modified by its environment, propagated by an extension of the specific disease from the nose and pharynx through the Eustachian tube to the middle ear.

ON THE EVACUATION OF SPINAL ABSCESSES WITHOUT DRAINAGE.[1]

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IT would be hard to find a surgical problem more difficult to solve than that of the best method of treating abscess arising from tuberculous disease of the spine. There are surgeons who never open a spinal abscess, and trust to one or another mode of treating the carious spine, in the hope of the abscess becoming quiescent or drying up. Others open abscesses only when they are on the point of bursting; others use aspiration, repeated twice, or more often, if the cavity refills; others open without draining by the old valvular incision; others open and drain, without doing more. Others again open and drain after washing out the cavity more or less thoroughly. Some open an abscess where it approaches the surface; others seek it at the nearest accessible point to the bone lesion. Treves, taking a rational view of the condition, sought to remove the cause of the abscess by reaching the carious focus and removing the dead or hopelessly diseased bone. Barker and others have dealt with the abscess cavity by careful cleansing and removal from it of all caseous and tuberculous material, as far as possible, with an attempt at obliteration of the abscess-cavity by immediate union of its walls. Other methods have also been adopted—hyperdistention of the sac, injections of various kinds, and so on. The very multiplicity of methods shows the inefficiency of any one to meet all cases. The ideal treatment would, of course, be a combination of Treves's and Barker's methods—the removal of the focus of disease to which the abscess is due, together with the removal of the contents and wall of the abscess-cavity. Unfortunately it is only in a very small minority of cases that this is practicable. As a rule, it is quite impossible to reach and clear away the carious focus in the spine. On the other hand, as, with efficient treatment, the bone-disease frequently becomes healed and the caseous material is detached and thrown off into the abscess-cavity, we may hope by thorough removal of the contents of that cavity to obtain a good result in a certain proportion of our cases, and this without leaving behind a possible source of future infection, such as after any of the other methods of treatment.

Barker's method must therefore be considered as the most scientific and practicable method of dealing with these difficult cases. Failure is due either to the fact that the disease in the spine is progressive, or to imperfection in the operation. The whole of the morbid material may have been removed from the abscess-cavity, and yet more may descend the (usually) narrow track leading from the diseased bone into the wider abscess-sac below. In such cases, even if the abscess has been obliterated after the first operation, it will sooner or later refill. The right treatment in such cases, I believe to be, to repeat the operation, just as in the first instance, and I would not hesitate to repeat it a third time, or oftener, if necessary. Therefore, if after the first operation a sinus forms and persists, it should be carefully scraped out again as soon as it is clear that sound healing will not occur; if left, tuberculous infiltration of the walls of the sinus is likely to take place. I have not entered into a detailed description of the operation; it is sufficient to say that a large opening should be made and the walls of the sac carefully scraped away with Volkmann's spoon or some other instrument, and well rubbed out with artificial sponges or similar material. The cavity should then be well washed out with an antiseptic lotion, and iodoform in suspension or solution, in-

[1] Read at the meeting of the American Orthopedic Association held in Washington, September, 1891.

jected. The excess of fluid should be squeezed out, the wound closed and dressed with firm pressure to keep the walls in contact, and, so far as possible, the cavity obliterated. If all goes well, no change of dressing is required for a week or two, and then if the case is successful, the wound is found healed.

Mr. Mayo Robson appears to have had considerable success in the treatment of these cases by repeated aspiration and injection solely of iodoform solution, but this cannot be looked upon as so perfect a method as Mr. Barker's, inasmuch as infectious material is far more likely to be left behind. While I believe that the principle of Barker's operation is the best, an examination of the notes of my cases shows that in most instances it has failed. The failure has been due not apparently to any septic condition, but simply to the fact that, as already pointed out, the whole of the disease has not been removed. My conclusions as to the treatment of spinal abscesses are:

1. The first essential is *rest*, in its surgical sense, to the spine.

2. When efficient rest has been provided, an abscess, unless it is increasing, should be left to itself for a period of not less than a month.

3. If the abscess increases and is evidently going to open spontaneously, or, if there is acute suppuration going on, the abscess should be dealt with by Barker's method, provided thorough asepsis can be assured.

4. An abscess that remains stationary for more than two months, or thereabouts, should be dealt with by Barker's method, provided that throughout the period *rest* to the spine has been secured.

5. Receding abscesses should be left alone.

6. Residual abscesses, if stationary or advancing, should be dealt with by Barker's method, and will nearly certainly be cured.

7. Refilling of an abscess or persistence of a sinus after evacuation should be dealt with by a repetition of the operation so soon as it is evident that repair will not take place, *i. e.*, usually in a month.

8. If there be a doubt about the real maintenance of asepsis, either from want of training on the part of the surgeon or his assistants, nurses, friends, etc., the abscess should either be left alone or dealt with by aspiration and injection of iodoform.

(I may refer to Mr. Barker's paper, *British Medical Journal*, February 7, 1891; to that of Mr. Mayo Robson, *British Medical Journal*, April 25, 1891; and, in the same number, to some cases of my own bearing on this question.)

The University of Moscow has received two hundred thousand roubles (one hundred thousand dollars) from an anonymous donor, for the establishment of a clinic of diseases of the skin and syphilis.

CLINICAL MEMORANDA.

A CASE OF MALFORMATION OF THE RECTUM AND IMPERFORATE ANUS.

BY J. W. SNOWBALL, M.D.,
OF PLAINFIELD, N J.

THE child, a male, was born Monday, June 13, 1891, by breech presentation, the labor lasting about two hours and a half. At birth the child was apparently robust and perfectly formed, but on the following day the nurse called attention to the fact that there had been no movement of the bowels, and upon making an examination the anus was found to be imperforate. The external sphincter was formed, giving the anus its normal appearance, but protruding through it and attached all the way around to its internal margin was a small pouch of skin; this was clipped off and it was then seen that a very small opening existed into which a probe could be passed for about half an inch. This opening was enlarged a little, and the case was allowed to remain in this condition for two days longer, or until Thursday, in order to see if any pouching would take place. In the meantime the urine was closely watched for meconium, to determine whether there existed any communication between the bladder or urethra and the rectum; none was found, nor was there any abnormal opening visible. No further pouching at the anus took place, and the general condition of the child remained much the same.

Dr. W. J. Swinton was now called in consultation, and it was decided to attempt to reach the rectum and if possible bring it down and attach it to the anus. Accordingly an incision was made through the anus in an upward and backward direction for nearly an inch and a half. Dense tissue was encountered all the way, but no bowel was found. The results of colostomy were then explained to the parents, and they decided against it, preferring that the child should perish rather than go through life with an artificial anus.

On Friday and Saturday the child had several severe convulsions. I gave it small, frequently repeated doses of sodii bromidi, spts. frumenti, and tinct. opii camph. No more convulsions occurred and the only perceptible change in the condition of the child was its gradually increasing weakness, until Wednesday the 24th ult., when the abdomen began to swell, but this subsided in a day or so. On the following Wednesday a well-marked peritonitis again appeared and the abdomen became very much swollen, tense, and discolored. This continued until death. On Saturday fecal vomiting occurred and was repeated at intervals until death. No change in the appearance of the anus occurred and there was no pouching or discoloration at any point that would indicate that nature was endeavoring to find a rent. Death from asthenia and peritonitis occurred July 8th, twenty-three days after birth.

With the assistance of Dr. James Wood, an autopsy was held four hours after death. The rectum was found to end abruptly in a cul-de-sac just behind the bladder and a little less than two inches from the anus, with which it was connected only by dense connective tissue through which there was no opening.

Prior to the birth of the child there had been scarlet

fever in the family, but the mother had suffered with nothing more than a sympathetic sore-throat. The child had a bright scarlet rash on its body at birth, which disappeared on the second day, and was followed by a general and profuse desquamation.

OPERATION FOR HYDROCELE.

BY R. J. CHRISTIE, SR., M.D.,
OF QUINCY, ILL.

THE following method of operating for the radical cure of hydrocele, will, I think, be found to have certain advantages. It is particularly applicable when carbolic acid is used, but other fluids may be used by the same means. I have used carbolic acid only, as that agent is much less painful than others and quite as efficient.

Only two instruments are required—one being an aspirator and the other a hypodermatic syringe. The latter should have a capacity of thirty minims and a needle of largest caliber. After properly cleansing the scrotum, the hypodermatic needle is pushed well into the hydrocele and the wire passed into the needle and beyond the point to prevent choking of the needle and jagging by its point. Keeping the needle securely in the sac, the fluid is then drawn off with the aspirator or trocar. Having withdrawn the aspirator-needle, attach the hypodermatic syringe, filled with pure carbolic acid, to its needle, and inject from ten to thirty drops; clasp the tissues around the needle with the thumb and finger, withdraw the needle quickly, distribute the acid by gentle manipulations into all parts of the sac, envelop the scrotum in borated cotton or gauze, suspend the testicles, and the operation is completed.

If it is thought desirable, in order to prevent pain, cocaine may be injected through the aspirator-canula and allowed to flow out before the acid is injected, but the carbolic acid itself acts very quickly as a local anesthetic.

The acid should not enter the needle before it is ready to be injected, else it might coagulate the albumin and stop up the needle.

The only chance for septic contamination is in the passage of the instruments through the tissues, which can, of course, be avoided by sterilization.

The advantages of this procedure are as follows: In all cases where there is a doubt in diagnosis the needle removes it. It accomplishes the injection without any danger of infiltration. The quantity thrown in is definite to a drop. The method is thoroughly aseptic.

TWO UNUSUAL CASES.

BY JAMES MITCHELL, M.D.,
OF MADISON, W. VA.

A SWALLOWED SILVER HALF-DOLLAR PASSED BY THE BOWEL.

ON the 22d of April I was called in great haste to see E. G., a female, seventeen years old, who a short time previously, while amusing herself by holding a half-dollar in her mouth and at the same time talking and laughing with some friends, had swallowed the coin. I found the family much excited, while the young woman herself was intensely alarmed. She pointed to the place where she thought the erratic half-dollar had found lodgment. The breathing was accelerated, but there was no dyspnea; neither was there pain or soreness at the point designated. Careful manipulation failed to detect anything in the throat. The girl was able to swallow a glass of water without any difficulty.

I informed the family that, beyond all doubt, the coin had already passed into the stomach where it would do little or no harm, and that there was some hope that the coin would be evacuated by the bowel. Three days later the last event transpired.

WORMS IN THE AUDITORY MEATUS.

On the 17th of October, 1891, W. B., a stalwart colored man, between twenty-five and thirty years old, entered my office complaining of pain in his ear, which he ascribed to the presence of a worm. Blood and pus were oozing from the ear, inspection of which disclosed the presence, deeply within the meatus, of a very lively white worm, which I succeeded in removing by means of a grooved director, and the procedure was repeated until I had removed four worms. The worms when removed were about half an inch in length, but when placed on a shingle they stretched out to an inch or more. They appeared none the worse for the rough handling they had received, for they continued in active movement, crawling like the earth-worm, but with much greater celerity. They were perfectly white, except for the head, which was small, black, and hard. I have never before seen any worm like them in the human ear or elsewhere, nor can I find a description corresponding to them in any of my books.

HOSPITAL NOTE.

REMARKABLE CASE OF VOLUNTARY CONTROL OF MUSCLES.

BY JOHN H. BRINTON, M.D.,
PROFESSOR OF THE PRACTICE OF SURGERY AND CLINICAL SURGERY AT THE JEFFERSON MEDICAL COLLEGE.

[*Clinic of the Jefferson Medical College Hospital, Oct. 31, 1891.*]

BEFORE dismissing the class, I wish to bring before you C. E. H., aged thirty-four years, married, Pennsylvanian, an iron-moulder by trade. Since boyhood he has possessed the power of individual contraction of many muscles, and of apparent dislocation, or subluxation, of certain joints. For the last two and a half years he has given public demonstrations of these muscular contractions about six or eight times daily, but has limited the joint-displacements to once a day.

When directed, the man contracted the *platysma myoides*, first on one side and then on both. The "risus sardonicus" was marked, and the elevation of the superficial fascia was demonstrated, so that the pumping effect on the veins coming from the head, as pointed out by Hyrtl, of Vienna, became manifest. The *sterno-cleido-mastoid* muscles were then contracted first on one side and then on both simultaneously, in their clavicular and sternal origins. The bellies of the muscles, and their insertion, were brought into strong relief, and the triangulation of the neck was distinctly shown. The *pectoralis major* and *minor*, and the *latissimus dorsi* were

equally brought out, and the axillary cavity exhibited, with its anterior and posterior limits hard and rigid. The slips of origin of the *serratus magnus* were made to present like the teeth of a saw.

The *deltoid* and *biceps flexor cubiti* were next shown; the long and short heads of the latter were marvellously distinct, and the tendon of insertion, with its aponeurotic slip to the forearm fascia, was made to stand out. When the forearm was fixed, a wonderful contraction or wave of motion could at will be transmitted along the biceps belly from below upward. The heads of the triceps extensor were also well shown. The voluntary action of the *forearm muscles* was equally pronounced. The *palmaris longus* and the *carpal flexors* responded perfectly, and conraction of the spiral fibers of the *supinator longus* and *supinator brevis* produced a remarkable effect. The action of the muscles of the *lower extremity* was in like degree conspicuous, especially that of those inserted into the patella. The heads of the *quadriceps extensor* were relaxed at will, thus permitting free lateral motion of the patella, which could be made to assume a very oblique and approximately vertical position.

A varicose condition of the *internal saphenous vein*, throughout its entire course on the thigh and leg, could be instantly brought about by some voluntary effort, which at first sight seemed inexplicable. Above the knee the vein was greatly increased in size, and below on the leg, it became enlarged, tortuous, and distended with blood, exactly as in an ordinary aggravated case of varicose veins of the leg. The column of blood seemed very large, and communicated a purring thrill when felt. This varicosity did not seem to be the result of the contraction of any of the muscles of the groin. The man said that "the under-skin of the thigh felt tight," and referred the muscular sensation to the outer side of the thigh. On examination, great muscular tension was detected over the outer side of the thigh and hip with external rotation of the trochanter, and fulness anteriorly over the head of the femur, dependent probably upon partial subluxation produced by enforced action of the *glutei* and possibly of the *tensor vaginæ femoris* muscles. As this varicose condition was evidently likely to become a permanent one, a discontinuance of the distending practice was strongly advised.

By fixing the hand, the head of the humerus could seemingly be dislocated backward. An apparent luxation of the head of the femur on the dorsum of the ilium could also be produced by strong muscular effort, the limb being shortened, adducted, inverted, and the sole of the foot carried across the instep of the oppo-ite foot This latter sign was more marked than in the ordinary iliac luxation. It evidently depended upon a synchronous partial inward dislocation of the ankle. Careful measurement showed that the trochanter rose about one inch above Nélaton's line, not nearly so much as it should have risen had the luxation been veritable and complete. By Allis's test, the thigh was lengthened instead of being shortened. It was, therefore, evident that the luxation was partial, and that the femoral head rested on the upper and external portion of the acetabular lip, and was held there by great muscular effort.

In like manner it was manifest that the apparent luxation of the head of the humerus backward was incomplete, and was caused by similar voluntary muscular action. The dislocations of the *patella* were lateral and incomplete, and were nearly vertical. A complicated twist of the knee-joint was produced by manual force, the exact anatomical relations of which it was difficult to determine. At the ankle-joint a partial internal displacement could be developed at will. Imperfect motion could also be established at the junction of the manubrium with the body of the sternum.

The production of the displacements at the larger joints, the man states, is invariably accompanied by a sharp, twitching, nervous feeling, which extends up the spinal column to the base of the brain, and which is often followed by severe headache. In the development and reduction of these displacements he is conscious of the ligamentous and muscular strain, and can feel and hear the sliding of the bones, the sound of which can also be heard and the jerk seen by those around him, as you, gentlemen, can bear witness. The reduction can be readily accomplished, provided he is allowed to concentrate his mind upon his muscles, and is not disturbed by questions or otherwise interfered with. On one occasion, in attempting some abnormal movements at the articulations of the lower jaw, he really did produce a complete bilateral luxation, which he could not replace, which remained unreduced for two hours, and which was then reduced by a surgeon.

This man also possesses the power of slowing, almost to cessation, the radial pulse. This he accomplishes by voluntarily pressing the head of the humerus upon the lower part of the axillary artery and by general muscular compression of the arm-vessels. When this is done upon the right arm, the left radial pulse, as well as the femoral beat, is greatly diminished. The action of the heart is much slowed, and the beats become very feeble and indistinguishable. Auscultation shows the first sound of the heart to be slightly booming and muffled; otherwise the heart is normal.

The man has stated to me that he can at will arrest the flow of urine in full stream, and that during sexual congress he can for the time being hold or prevent, and also instantaneously interrupt the escape of semen, which must, therefore, pass backward into the bladder. If this be so, it evinces a remarkable control over the cut-off muscles of Wilson and Guthrie, and possibly over those of the bulb of the urethra. He has no voluntary control over the cremaster muscles.

The examination of the muscular movements and articular displacements in this case have been made with the coöperation of my colleague, Professor Keen, and that of the circulatory phenomena with the cooperation of Professor Hare.

MEDICAL PROGRESS.

A Case of Pneumothorax and Pneumopericardium.—LUNDIE (*Edinburgh Medical Journal*, September, 1891) reports the case of a clerk, twenty-two years old, who one day while at dinner, in apparently perfect health, was suddenly seized with severe pain in the left scapular region and shortness of breath. When seen, a few days later, the expansion of the left chest was deficient and the percussion resonance was heightened. The usual area of cardiac percussion-dulness was wanting.

The breath-sounds were feebly heard—in some places not heard at all. There was no elevation of temperature and the frequency of the pulse was but slightly accelerated. Under treatment, recovery progressively took place. Five weeks after the first occurrence, pain in the left side of the chest again set in. When the patient assumed the dorsal recumbent posture, the cardiac impulse could not be seen or felt, and the usual area of cardiac percussion-dulness was resonant; but when the patient, was erect, the impulse was felt and there was dulness over the lower portion of the sternum. On palpation a thrill was felt in the precordia. On auscultation, irregular, tumultuous tinkling sounds were heard, more intense with the systole. The explanation of the phenomena is that, in the first attack, pneumothorax resulted. In consequence of pleuro-pericardial adhesions that existed, the heart was, with the lungs, displaced backward. In the second attack, pneumopericardium developed. The only assignable cause for the entrance of air into the pleura and pericardium is rupture of the adherent and delicate membranes as a result of some unusual effort.

Operative Treatment of a Cyst of the Pancreas.—ALBERT (*Wiener medizin. Presse*, No, 43, 1891) recently presented to the Royal Society of Physicians of Vienna a man upon whom seventeen months previously he had operated for a tumor of the pancreas. Clinically, there was a tumor, as large as the uterus at the end of pregnancy, situated in the epigastrium and sending a process into the pelvis, the percussion-dulness of which posteriorly was indistinguishable from that of the liver and which was taken for an echinococcus of the liver. As, however, the stomach could be detected anteriorly to the tumor, a diagnosis of tumor of the pancreas was made and operation advised. When the abdomen was opened by a median incision and the transverse fascia divided, no translucent membrane was found; so that to enter the free peritoneal cavity, a second incision was made in the right hypogastric region, the tumor reached and punctured. After the cyst was evacuated, it was drawn forward, and a portion that appeared to protrude from the foramen of Winslow was removed. It did not seem advisable to remove the entire tumor, on account of the high mortality (50 per cent.) of such operations. For some time after the operation, a saccharifying and peptonizing fluid was discharged through the wound, progressively diminishing in quantity. The case was the third of tumor of the pancreas operated on by Albert.

Scleroderma.—From clinical observations in three cases and a post-mortem study of one, DINKLER *Deutsches Archiv für klin. Med.*, Bd. xlviii., H. 5 u. 6) maintains that scleroderma is a disease *sui generis*, characterized at the outset by firm swelling and at a late stage by cicatricial-like atrophy of the cutis. The swelling is frequently preceded by vasomotor disturbances. Pigmentation and desquamation may take place, but are not distinctive. Scleroderma may be diffused or circumscribed. The disease process is not restricted to the skin; it may appear in the brain and in striated muscular tissue. The etiology of the disease is obscure; the affection may appear spontaneously or it may follow acute or chronic injuries. It is anatomically characterized by hyperplasia of the connective tissue and by vascular changes. The disease of the vessels involves only individual arterial branches and corresponds to periarteritis, mesarteritis and endarteritis. Clinical observation and anatomical investigation render it probable that the disease is dependent upon an inflammatory process especially involving a varying arterial distribution. The prognosis is dubious. Treatment must be constitutional, conjoined with the application of the constant current and warm baths.

Death from Pyemia as a Result of the Sting of a Fly.—PALTAUF (*Wiener klin. Wochenschr.*, No. 35, 1891) has recorded the case of a woman, thirty years old, who was stung on the right eyelid by a fly. On the following day there were considerable swelling, redness and pain in the right temporal region, with fever, and to these were added cerebral symptoms. On the second day manifestations of collapse appeared, with heart-failure; death ensued on the morning of the third day, little more than forty-eight hours after the fly-sting.

At the autopsy, in addition to the conditions observed during life, there were found multiple phlebitic thrombi and abscesses in the texture of the right temporal muscle, thrombi in a radicle of the cavernous sinus and in the sinus itself, an excess of fluid in the pleural cavities, and multiple, softening, hemorrhagic and purulent thrombi in the lungs. There were also parenchymatous swelling of the kidneys and liver and acute enlargement and softening of the spleen. The pus of the phlebitic abscesses in the temporal muscle, of the pulmonary infarcts and incipient abscesses, and the fluid of the spleen contained many cocci, which on culture proved to be principally staphylococci aurei together with staphylococci albi.

Purified Tuberculin.—KOCH (*Deutsche medicin. Wochenschr.*, October 22, 1891) has announced the results of investigations conducted in an endeavor to isolate the active principle of tuberculin. By treating the crude product with absolute alcohol, and then with 60 per cent. alcohol, and finally drying, he was able to obtain a light-gray powder representing about one-half of the active principle. From the large proportion of ash to which it gives rise, and from its variability of reaction to numerous tests, the product is thought not to be an absolutely pure one. It is readily soluble in water and feebly soluble in alcohol. Preserved in glycerin, it retains its activity for months From its chemical reactions purified tuberculin is considered to belong to the group of albumins. It differs from the albumoses, which it most closely resembles, and from the toxalbumins, in its resistance to high temperatures. It differs from the peptones in that it is precipitated by iron acetate. It is possible that it may belong to a distinct group of albumins that includes also the products of other pathogenic bacteria. The physiological effects of the purified product, as observed in guinea-pigs and in man, are identical with those of crude tuberculin.

Actinomycosis of the Peritoneum, with Recovery after Operative Treatment.—KERN (*Corresp.-bl. für Schweizer Aerzte*, September 15, 1891) reports the case of a gardener, twenty years old, who had an attack of typhlitis,

which moderated under rest in bed, liquid diet, and the application of ice-bags and cold in other forms; but it was six months before material improvement set in, dull pain in the right iliac fossa, however, persisting. As time wore on, diarrhea developed, a sense of induration in the lower half of the right side of the abdomen became perceptible, and progressive emaciation appeared. Subsequently multiple fistulæ formed in the anterior abdominal wall, giving vent to fetid, yellowish pus, containing numerous grayish-green granules, as large as pin-heads, which, on examination, proved to be actinomyces-masses. Irrigation with saline solutions and with iodoform emulsion proving futile, the various sinuses were laid open, all suspicious surfaces curetted, and the thermo-cautery applied. Ultimately complete recovery ensued. Examination of the contents of several carious teeth that the patient possessed had yielded negative results.

Congenital Muscular Wry-neck.—PETERSON (*Zeitschr. f. Orthopäd. Chirurg.* (i, 1, 1891), from a study of the subject of congenital, muscular wry-neck, has arrived at the conclusion that there is no evidence that wry-neck has ever developed from rupture of a normal flexor or extensor of the head during birth. Clinical experience in the sequelæ of tears of muscles, as well as the negative evidence of experiments in animals, is against such an etiological relationship; while the occurrence of intra-uterine shortening of a flexor or extensor of the head has been demonstrated. Clinical observation and experiments in animals have shown that permanent approximation of the points of origin and insertion of a growing muscle is followed by shortening. The intra-uterine development, the preponderant involvement of the right side, as well as the frequent occurrence of wry-neck in cases of pelvic presentation and of difficult labor, are readily explicable by an abnormal condition of the amnion, and require no further explanation. Stromeyer's dictum of the traumatic origin of wry-neck has not been sustained. The accoucheur cannot be held responsible in any case of congenital wry-neck.

Extirpation of the Gall-bladder, with the Establishment of a Communication between the Duodenum and the Common Choledoch Duct.—In operating upon a woman forty years old, with calcular obstruction of the cystic duct, SPRENGEL (*Deutsche medicin. Wochenschr.*, Sept. 3, *1891*) mistook the cystic duct for the common duct, and the common duct for the intestine. By expression the calculus was forced from the cystic into the common duct, and it was thought that the biliary passages were free. The symptons continuing, however, the abdomen was again opened, and two calculi were found, one in the cystic duct, and the other at the transverse fissure of the liver. On account of the former the gall-bladder was removed, and the cystic duct was ligated; the second calculus was crushed. To overcome the obstruction in the common duct an artificial communication was established with the duodedum. Three months later the patient had recovered, and was free from symptoms.

The Diuretic Action of Fresh Thyroid Juice.—In a case of myxedema, FENWICK (*British Medical Journal*, October 10, 1891), in the course of grafting the thyroid gland of a sheep, split the gland and, before placing it in position, rubbed into the subcutaneous tissue some of the glairy secretion that oozed from the cut surface. On the following day, the temperature of the patient had risen from its habitual subnormal level to the normal, and the quantity of urine had increased from twenty to fifty ounces per day. In a second case of myxedema, thyroid juice was injected hypodermatically, with similar results. In healthy persons no such results were observed.

Fenwick expresses the view that the current theory of the action of the diseased thyroid gland is incorrect and that the condition of myxedema is dependent upon a perversion of the renal function.

Cirsoid Aneurism of the Foot.—At a meeting of the Royal Society of Physicians of Vienna, BILLROTH (*Wiener medizin. Presse*, No. 43, 1891) presented a corrosion preparation made from the amputated left foot of an hysterical woman, fifty years old, who had complained of pain in the member. The foot was edematous. On deep palpation over the malleoli, decided pulsation could be detected, and on auscultation an aneurismal bruit was to be heard. By firm pressure, defects in the fibula were recognized; on removal of the pressure, pulsation became perceptible. A diagnosis of pulsating sarcoma in the bone was made and the foot was amputated. The corrosion preparation showed, however, that both malleoli were occupied by convoluted plexuses of blood-vessels surrounded by masses of round cells. In the course of a short time similar manifestations appeared upon the right foot, so that a revised diagnosis of cirsoid aneurism was made.

Subcutaneous Injections of Cocaine in Trigeminal Neuralgia.—MALHERBE (*Gaz. méd. de Nantes*, No. 11, 1891) has reported two cases of obstinate trigeminal neuralgia that, having resisted the ordinary means of treatment, finally yielded to subcutaneous injections of a third of a grain of cocaine hydrochlorate. The injections were made at the point of the greatest pain, at first twice a week, then, as the intervals between the paroxysms were prolonged, every ten days and more. One of the cases was in a woman, seventy years old, who for nineteen years had suffered with severe neuralgia of the left mental and buccal nerves. The second case was also in a woman, fifty-four years old, who for five years had suffered with neuralgia of the right infra-orbital nerve.

The Dermatoses of Musicians.—STERN (*Münchener medicin. Wochenschr.*, October 20, 1891) has recorded cases of sycosis in violin-players that developed in the left submaxillary region as a result of the mode of supporting the instrument. In a flute-player an eczema of the chin and lips developed from the use of an instrument with a wooden mouthpiece. Under appropriate treatment the condition was remedied, and on the substitution of an ivory mouthpiece did not return. In trumpeters Dr. Stern has observed various abnormalities of the lips as a result of impact against the mouthpiece.

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THE UNTRUSTWORTHINESS OF THE LAY PRESS IN MEDICAL MATTERS.

UNLESS the writing be a verbatim quotation from a medical journal it is quite impossible for an educated physician to finish the reading of an article on a medical subject in a non-medical journal without a smile either of contempt, of amusement, or of both combined. A strange fatality seems to attend the filtration of medical facts through the lay editorial and reportorial mind. Not long since, the editor of one of the most popular and respectable magazines, with puzzling injudiciousness, allowed a professional humorist the use of his columns to prove that the quintessential nonsense and mummeries of medieval therapeutics had been extinguished solely by the power of so-called homeopathic rationalism and science. By reason of this exquisite illogicality the humor of the sketch to discriminating minds was greatly but unconsciously heightened. In a recent number of one of the best of English magazines, an author and the editor evidently thought that they were firing at the slow-going medical profession a discovery of vast importance as to the resuscitation of asphyxiated persons. What was new in the discovery was not true, and what was true was by no means new. Had we space we could adduce from recent journals of otherwise good reporting ability a score of examples of most egregious and not infrequently amusing misrepresentation. We complain, so far, of no intentional misinformation, but wish only to emphasize the fact that with the best ability and intention the result is ludicrously inaccurate and the mind of the ordinary reader is filled with half-truths and untruths that perpetuate the proverbial and frightfully inaccurate jumble of opinions as to medicine held by the ordinary individual.

If we descend from the better class of carefully edited serials to the preposterous Sunday newspaper and the outrageous advertising sheets supplied Master Demos, we are at once confronted with a farrago of unmedical travesties of medical knowledge quite beyond adequate description and worthy vilification. Here begins an ignorance that is far more than culpable and a misrepresentation that is at once venal and shameless.

Even in many of the best papers the power of the patent-medicine man, the World's Therapeutic Institute, and the advertising agent is supreme. The profitable advertisement closes the editorial mouth or opens it with a promptness that is comparable only to that of a rigid mechanism responding to a pre-ordained stimulus. The most striking exemplification of this has lately occurred. From one boundary of the United States to all the others almost every newspaper of this broad democratic land has been repeating as news and howling as editorial judgment the echoings of a certain hired advertiser's agent of the patent-medicine fraternity, denouncing and abusing the poor druggist who should dare to offer his customer any preparation other than the "patented" cure-all the poor over-advertised dupe of a customer had asked for. The "substitution evil" has been cursed and spat upon with all the wrath of all the money of all the patent-medicine syndicates of all the Americas. What are the facts? A set of sharpers compound some secret mixture, good or bad, of drugs and syrups, and relying upon the gullibility of people, purchase the press with an odd hundred thousand dollars' worth of advertisements, in order to reap millions. The booby dupe calls at the drug-store for the cure-all. The druggist cannot make a cent on the patented and advertised article, so completely has the advertiser got him in his grip. But the druggist knows the ingredients of the mixture, and knows the advertised article is sold at an enormous profit to the advertiser. He is equal to the emergency and mixes

his own unpatented medicine, truthfully guaranteeing it in every way as good as that of the patentee, and with a fair profit to himself he can sell it at half the price of the advertised and patented article. In a commercial sense he is doing perfectly right, and everybody but the owner of the secret article must wish the druggist well in his hard lot in thus fighting fire with fire. But in hounding the druggist as a scoundrel the general press has shown most superbly how its opinions in medical matters are anything but useful to the community. Could a single one of these guardians of public morality be counted on to help tell the world what a disgrace to civilization the entire vile patent-medicine business is?

The query arises as to the possibility of setting this right—of the possibility of so stating medical truths that the common intelligence may be able to understand them, and of the duty and responsibility of medical men in thus moulding and clarifying the lay mind about these things. Other departments of science have their plebificators, their professional popularizers of knowledge, and in every other sphere attractive handbooks and simple expository treatises are continually multiplied, which, without distortion and mystification, put even the most unlettered *au courant* with the latest discoveries and the most abstract of scientific truths. Why is it that that which pertains most vitally to the welfare of each and every person is left untouched and the unprofessional mind allowed to grope in a gloomy twilight of fancy, prejudice, and ignorance? The continuance of this condition of the lay mind is the essential and almost sole reason that quackery, medical superstition, and medical sectarianism are of such prolific growth. Ignorance and misinformation are the manures of these sad weeds.

Among many there are three principal methods whereby the profession may counteract the malicious influences at work:

1. A persistent endeavor on the part of each of us to have modern and scientific physiology made a more prominent part of the teaching in all schools and colleges. Wherever we can, we should try to influence school boards, educators, teachers, and trustees of educational institutions, both primary and higher, to make anatomical, physiological and hygienic courses of study a necessary part of the curricula.

2. Medical men should write for the newspapers, and should compile elementary manuals that may popularize medical knowledge without mutilating and rendering it absurd or erroneous. We are well aware of the fearful danger lurking in this advice: the license thereby given the schemer to advertise his professional ability and service—a danger that in the present state of professional greed and public indiscrimination cannot be too sharply emphasized and prophesied. But it is not an inobviable danger, and its checks and preventions will, with growing intelligence and morality, be speedily found.

3. The noble and marvellously effective new method of general education, known as the University Extension system, should be seized upon and made use of by the medical profession to extend in the minds of all a correct knowledge of the body and its diseases. The instrument seems as if made to our hand. Professors in medical colleges, teachers of physiology, hygienists, even the humblest practitioners of medicine, have inexhaustible stores of correct observation and knowledge for which humanity is humbly waiting and asking, and which to it would be of inestimable value.

KOCH'S FURTHER STUDIES UPON "TUBERCULIN."

NOTWITHSTANDING the more or less adverse turn taken by the wave of public and professional sentiment concerning the experiments of KOCH upon the treatment of tuberculosis, he properly continues his work in this line, apparently oblivious of all criticism. The latest of his contributions[1] upon the nature of tuberculin, and the method for purifying it, serve to shed considerable light upon the subject.

In this publication KOCH states that tuberculin is an extract prepared from the tubercle bacillus itself.

One of the drawbacks in the preparation of tuberculin, says KOCH, has been the difficulty in obtaining a sufficient amount of material upon which to work. The method of growing the bacilli on solid media until they accumulate in amount sufficient for the extraction of their active principle required so much time that it became necessary to employ other means. KOCH finds that the bacilli can be obtained in much larger quantities by cultivating them in ordinary nutrient veal broth to which from 4 to 5 per cent. of glycerin has been added. The cultivation is to be conducted at a temperature of 38° C., and in vessels that permit of a large surface-area of fluid. When grown in this way the organisms develop very quickly in the form

[1] Deutsche med. Woch., No. 43, Oct. 22, 1891.

of pellicles that float upon the surface of the fluid, and in from six to eight weeks the culture may be said to be "ripe," *i. e.*, ready for the further steps in the process of extracting tuberculin from it. When ripe the cultures grown in this way are to be evaporated over the water-bath at a temperature of 100° C., until they are about one-tenth of their original volume. They are then filtered under pressure through filters of unglazed porcelain or silicon. The filtrate represents crude tuberculin, the form in which it has been employed since its introduction.

The advantage that this method possesses over the original plan for obtaining tuberculin is that from the same number of organisms a much larger amount of active principle can be obtained.

In the original method the bacilli were grown upon the surface of a solid medium, from which they were scraped and extracted in glycerin. In the present method of cultivation in a fluid medium the extraction goes on all the time that the organisms are growing, so that the fluid in which they are developing contains tuberculin in comparatively large quantities.

After extraction by this means the bacilli are robbed almost entirely of their active poisonous principle, the poison having been dissolved in the fluid.

The latest contribution of KOCH presents also an account of experiments made with a view of obtaining tuberculin in a pure state, for the purpose of becoming more intimately acquainted with its true nature. The impure, crude extract was subjected to a number of methods of chemical analysis before a plan was found by means of which it could be freed from coloring and extractive matters and salts, and the active agent alone obtained. Without going into the details of the various methods, it will suffice to state that by subjecting the impure extract to the action of 60 per cent. alcohol, a pure white flocculent precipitate was obtained that, when dissolved in glycerin, presented all the characteristics of the crude extract, but in a more concentrated degree.

Pure tuberculin thus obtained is in its action upon man about forty times as energetic as crude tuberculin, and for guinea-pigs about fifty times as powerful.

The action of purified tuberculin was tested by KOCH upon four of his colleagues, and in all the reactions were in general analogous to those following the use of the crude extract under the same conditions.

An interesting observation in the course of these experiments was a rise in temperature corresponding with the increase in dose. For example:

By subcutaneous injection—

2	mg.	caused a rise in temperature to	38.2° C.
3	"	"	38.7°
4	"	"	39.0°
5	"	"	39.2°

In all of these cases the condition of the individual operated upon returned to normal within about twenty-four hours after the injection.

The result of closer study of the constitution of tuberculin led to the conclusion that it belongs to the class of albumins, though it differs in its behavior with different reagents from both toxalbumins or albumoses and peptones.

According to elementary analysis pure tuberculin has the following composition (PROSKAUER):

	First analysis.	Second analysis.
Carbon	48.13 per cent.	47.67 per cent.
Hydrogen	7.06 "	7.18 "
Nitrogen	14.46 "	14.73 "
Sulphur	1.17 "	1.14 "

THE NECESSITY FOR AN ADEQUATE SYSTEM OF CATTLE-INSPECTION.

THROUGH the efforts of the Director of Public Safety and of the Board of Health of the city of Philadelphia, twenty-one dealers in cattle, butchers, and venders of meat have been arraigned and held to answer at court for selling or exposing for sale diseased cattle or unwholesome meat. The diseases from which the cattle suffered were actinomycosis and tuberculosis. The meat condemned as unwholesome was obtained from calves slaughtered when only a few days old.

Actinomycosis, as defined by ZIEGLER, is a progressive inflammatory affection, set up by a certain fungus—the actinomyces—attended with the formation of granulations and fibrous tissue, and with suppuration, attacking human beings, cattle, and swine, and communicable by inoculation. It was first described in the form in which it appears in cattle, in 1877, by BOLLINGER, and in the same year by ISRAEL as it appears in man. Since then the subject has received considerable attention at the hands of numerous writers.

The fungus enters the body through abrasions of

the mucous membrane of the mouth and pharynx, the respiratory tract and the digestive tract. In cattle the disease locates itself primarily in the jaw, and most frequently in the lower jaw.

It presents itself as a tumor resembling a sarcoma, and, from the swelling it produces, is known among cattle-dealers as "lump-jaw." Both ISRAEL and PONFICK have transmitted the infection to lower animals by inoculation from man, but no direct relationship between the disease as occurring in the lower animals and as met with in man has as yet been clearly established. While it is probable that man and the lower animals become infected from some common source, it is possible for the former to be infected by the latter. Cattle suffering from actinomycosis should unquestionably be condemned, and their carcasses destroyed. The fact that a number of cases of actinomycosis have been detected as the result of a limited search indicates that the disease is by no means uncommon.

In the course of the investigation it was further discovered that large quantities of immature veal are constantly being placed on the market. Veal only a few days old is generally watery and flabby, and is difficult of digestion. It is liable to occasion gastric irritation, and on this account should be considered unwholesome as food.

The investigation demonstrates the utter helplessness of the people without a system of vigilant inspection, and the necessity for the institution of means to afford protection against practices dangerous to the public health.

SOCIETY PROCEEDINGS.

PHILADELPHIA ACADEMY OF SURGERY.

Regular Meeting, October 5, 1891.

DR. WILLIAM HUNT, PRESIDENT, IN THE CHAIR.

DR. THOMAS G. MORTON read a paper, entitled "Gunshot Wound of the Thigh; Ball Found in and Removed from the Neck of the Femur; Recovery."

James T., twenty-three years old, was shot with a revolver, the ball entering the left thigh below the groin; two unsuccessful attempts were made to find the ball. Four days later, when admitted to the Pennsylvania Hospital, the patient was able to bear weight upon the injured limb, and motion in the joint was free, showing that there was no solution of the continuity of the bone. The bullet-wound, which was two inches to the inner side of the great trochanter, was inflamed and a considerable amount of fetid pus exuded from the opening. The temperature was 101°. A probe passed in deeply at a right angle to the femur came in contact with bone.

A five-inch incision led to a deep pus-collection. The track of the bullet being opened, the neck of the femur, into which the ball had penetrated, was exposed; but there was no fracture in continuity. With chisel and gouge the track in the neck of the femur was epened to the extent of an inch or more, and the ball was found so firmly imbedded that it was with difficulty displaced and extracted. The excavated track in the bone, as well as the wound of the soft parts, was curetted and cleansed, and a rubber drain inserted.

Convalescence was uneventful, although the wound was slow in closing. The ball was conical and weighed 136 grains. (Patient exhibited.)

From an examination of the histories of cases of gunshot wounds during the Crimean war, the war of the Rebellion, and elsewhere, Dr. Morton had been unable to find any similar recorded case. Hennen, in his *Principles of Military Surgery*, London, 1829, reports, page 158, as follows: "I have seen balls lodged in almost every part of the trochanters, neck, and head of the bone, and yet the most accurate examination during life did not lead to a discovery of the situation."

DR. MORTON read a second paper, entitled "Chronic or Relapsing Appendicitis: Removal of the Appendix in an Interval between Attacks."

Jacob K., twenty-nine years old, eight months previously had an attack of severe abdominal pain lasting several days—the pain being principally in the right iliac region, with the usual symptoms indicating appendicitis. Four months later he had another attack, for which he was admitted into the Pennsylvania Hospital; in a short time was discharged, apparently quite well. A few weeks subsequently he had another attack of pain, but the symptoms were not so severe as to confine him to the house.

About a month previously he first noticed a small lump in the appendix region, on account of which he was, a few days later, admitted to the medical ward of the Pennsylvania Hospital. Temperature, pulse, and respiration were normal; there was no pain at the site of the tumor, which was apparently as large as a pigeon's egg; it was immovable, hard, and oval in shape. The appendix was judged to be enlarged and in a chronic inflamed condition, and as it was liable to become perforated at any time, on account of its retained contents, its removal was advised.

The usual operation was performed, the only difficulty experienced being hemorrhage from division of the epigastric artery. There were no evidences of recent inflammation; the appendix was enormously enlarged, dark-red in color, and so firmly bound to the cecum by old lymph-adhesions that great difficulty was experienced in detaching it from the cecum sufficiently to place a ligature beyond a large, foreign body that it contained. A glass drain was introduced, and the usual dressings were applied.

On examination, the excised appendix was found to have exceedingly thick walls; its mucous membrane was in folds and evidently ulcerated; it contained a large oval concretion resembling an ordinary uric-acid calculus.

The concretion measured an inch in length, and an

inch and a half in circumference; its distal extremity was smooth and rounded, and moulded to the shape of the distended organ; the other end was rough from irregular deposit.

DR. MORTON also read a report of a case of "Perforative Appendicitis; Removal of the Organ; Recovery."

Joseph T., twelve years old, was admitted into the medical ward of the Pennsylvania Hospital, suffering from acute appendicitis, with threatening, if not actual, perforation.

Six days previously he had freely eaten of fruits, and had considerable pain; four days later, after lifting a heavy can of water, he "felt something give way inside, and had a sharp pain." After this the symptoms became progressively worse.

On admission, he had marked local peritonitis and general abdominal pain. In the subsequent six days the symptoms in no wise improved; although there was no tumor or hardness, and the appendix region was not tympanitic, yet the local pain, the sweats, and the slight chilliness indicated pus-formation, and the appendix as the source of the trouble.

A lateral abdominal incision was made; on reaching the cecum the appendix was found glued to it; pus was not discovered until the appendix was separated, when an immense abscess was found, into which the sloughing appendix had emptied its contents; the cause of the ulceration was a large, oval, fecal concretion firmly held in the gangrenous extremity of the appendix. The abscess contained several ounces of fetid pus, and had dissected its way backward to the iliac bone. The appendix was ligated close to the cecum and removed; two drains were introduced. Convalescence occurred without interruption.

DR. T. S. K. MORTON presented another appendix, removed a few days previously, that contained a large concretion, the exact nature of which had not yet been determined. He added that so much has been said about cherry-stones, orange-seeds, and similar bodies forming the nuclei of concretions found in the appendix, that in every case it should be clearly demonstrated that the formation is either a true foreign body or else a fecal concretion.

The appendix demonstrated was removed from a man who had had relapsing attacks during a period of six years, completely undermining his health. He presented the manifestations of acute septicemia, with all the signs of violent appendix trouble. The operation was promptly performed. The appendix was found gangrenous, and the foreign body was discovered. The appendix was removed, and the abscess-cavity washed out and packed with gauze. In the subsequent ten days there was no symptom of any trouble; the man remained perfectly comfortable.

Among the curious bodies that have been found in cases of appendicitis, Dr. Morton mentioned a lumbricoid worm, which was found in a perityphlitic abscess without apparent perforation of the appendix or cecum. It must have escaped from the appendix at some time, the perforation afterward closing.

DR. T. G. MORTON added that in a recent case of perforative appendicitis, a globule of solder, supposed to have been taken with some canned tomatoes, and which had evidently caused the perforation, was found in the abscess-cavity.

DR. JOHN B. ROBERTS stated that Dr. Owens, of Chicago, had related to him a case in which a gelatin capsule was found in the appendix.

DR. O. H. ALLIS made some extemporaneous remarks, in which he endeavored to illustrate a point in the management of cases of supra-pubic operation. In such cases soiling of the clothing by the discharges is sometimes exceedingly annoying. Dr. Allis reported the history of a case in which a year previously he had cut for stone. He performed the lateral operation, and found a soft stone of considerable size. The opening closed immediately, so that it was necessary to draw off the water three hours after the operation; no water ever passed through the wound. The patient remained remarkably free from trouble for about six months; then he began to suffer with irritation of the bladder as before, and he again suspected the presence of stone. The searcher failed to detect a calculus, the examination occasioning a good deal of pain. Dr. Allis then determined to perform the supra-pubic operation; this was done about a year after the first operation. Some small pieces of stone were found in the bladder behind a large prostate. These were removed, and the patient did well after the operation, but a strong odor of urine emanated from the clothing of the patient. After shaving the hair about the opening, Dr. Allis washed the skin with chloroform, then smeared a small amount of liquid-rubber cement over the skin around the opening, and finally stretched a piece of rubber dam over this. The rubber was kept in close contact with the skin for a few minutes, when it adhered perfectly and remained adherent for two or three days. The edges of the dam were then folded up over a piece of absorbent cotton, and in this way the man was kept perfectly free from soiling. In this case it was desired to have the opening remain; the bladder was washed out, the patient assuming a position on the hands and knees, so that the enlarged prostate would not interfere with the discharge of fluid. In this way, during the first month a number of portions of stone, some of considerable size, were washed out. The man has since gotten out some pieces himself. This same application might be of service in cases of breast-surgery in which the patients are much annoyed by the soiling of the clothing.

DR. ALLIS made some further remarks on "Digital Removal of the Entire Prostate." He related a case of enlargement of the prostate in which he performed a supra-pubic operation, removing the entire gland. The patient recovered from the operation, and died about six weeks later from some pulmonary or cardiac complication. After making the supra-pubic opening, Dr. Allis cut through the mucous membrane over the prostate with his finger-nail, and then carried his finger down between the gland and the mucous membrane, dissecting this out in two portions. The masses removed were exceedingly large, and there was very little hemorrhage. The specimen revealed no remains of the prostate gland. The physician who had attended the patient had used the catheter, which would sometimes pass readily into the bladder, and sometimes not. On passing his finger down to the prostate, Dr. Allis found what appeared to be an opening through which a catheter passed, enter-

ing a canal at the base of the gland and emerging at its posterior portion. The catheter could be felt by passing the finger in the opening in the upper part of the gland. The structure of the gland was densely fibrous, and to a certain extent it was lobulated.

Dr. Allis further related that he had performed four supra-pubic operations in each of which there was a certain amount of gangrenous condition about the opening, which subsequently granulated satisfactorily. In every instance the wound was packed from the bottom, with capillary drainage from the first.

DR. T. G. MORTON stated that he had seen cellular sloughs after supra-pubic operations, but not the condition referred to by Dr. Allis.

DR. W. W. KEEN stated that the method described was a very ingenious and a very useful one, and should be widely known. It is by far the best method that he knew of for the control of the annoyance from discharges. It, however, has a wider application than simply in supra-pubic operations. It can be used in any operation in which there is discharge of fluid.

DR. W. JOSEPH HEARN reported a case of hytadid cyst in a man, forty-two years old, a shoemaker, a native of Hungary, who had been in the United States a year. Five months before presenting himself the man had observed a nodule, about as large as a marble, in the right buttock. The mass was painful on pressure and seemed to elude the grasp. It grew with considerable rapidity. On examination a large swelling about as large as three oranges was found on the left lateral aspect of the buttock; on palpation an indistinct crepitus was elicited; there was a sensation as of fluid beneath the deep fascia. The site of the greatest fluctuation changed from time to time in the course of the examination. The skin was not edematous or discolored. The man felt a sense of tension over the femur, great pain on motion, and tenderness on pressure. He gave a history of digestive troubles, was sallow, persistently constipated, and had a coated tongue. Under the belief that there was an abscess the man was etherized, and an incision was made in the buttock. Beneath the gluteal muscles a cyst was opened and a large quantity of serum, together with detritus and daughter-cysts, evacuated. The original incision was enlarged, the cavity curetted, washed out with a solution of corrosive sublimate, and drainage-tubes inserted. For two weeks the wound was irrigated daily with a solution of corrosive sublimate, considerable masses of the cyst-wall being discharged at each washing. Three weeks after the operation there were no evidences of disease remaining.

This case of hydatid cyst of the buttock presents many elements of interest. In the first place a mistake in diagnosis seems to have been anticipated by so distinguished a man as Sir Thomas Watson, who states that the diagnosis is usually made by operating on an abscess and finding an hydatid cyst. In the second place a curative result was obtained by simple incision and antiseptic irrigation, a proof that it is not necessary to remove the cyst-wall.

The next point of interest is the possible source of the disease. It is universally recognized that hydatids are the product of the ova of the tenia echinococcus, the dog usually being the host of the adult worm. The ova find their way with the food or drinking-water into the stomach of man, where they lose their covering and are set free to pursue their wanderings until they find a place of permanent abode.

The patient in question did not keep a dog nor was he accustomed to eating pork or raw beef; but he was exceedingly fond of salad, eating it in large quantities, without taking the trouble to wash it. Bartholow some years ago observed that lettuce is liable to become contaminated with the excrement of the dog, and thus capable of giving rise to hydatid disease. Hydatid cysts are common in Iceland, but rare in the United States.

DR. HEARN also reported a case of "Nephro-lithotomy." The patient, a male, twenty-nine years old, had an attack of "gravel" at ten years of age, but had no further trouble until two years before he came under observation, when he had a severe attack of pain in the region of the right kidney—so severe as to confine him to bed and require the hypodermatic employment of morphine. Following this, he had four or five severe attacks, passing some blood with the urine in each attack. The pain would come and go very suddenly. There was intense pain on pressure both in front and behind the kidney. The man was unable to work, and an exploratory incision was made one inch below the rib, the capsule of the kidney being opened with a knife. On opening the kidney with the finger and enlarging the opening with the knife, a stone was distinctly felt. The stone was so adherent that it was almost impossible to remove it. During the operation the patient lost a large amount of blood. Had it been anticipated that the stone was so firmly lodged, special provision could have been made and the operation need not have been so prolonged. The hemorrhage was so severe that it was thought it would be necessary to remove the kidney. The shock following the operation was most profound; but, as is peculiar in these cases, however profound the shock, it is remarkable how quickly the patient recovers. The man recovered nicely, and in four weeks left the hospital perfectly cured. As soon as the stone was removed the wound was packed with iodoform gauze, and the bleeding at once ceased. After the operation the man passed bloody urine—an evidence that the ureter was patulous. The stone weighed 140 grains.

DR. HEARN reported yet two cases of vesical calculus. One patient, L. B., fifty years old, for eight or ten years had been complaining of aggravated cystitis. Examination disclosed the presence of a stone imbedded in the folds of the mucous membrane. Because the stone was so large the supra-pubic operation was performed. It was not possible to distend the bladder; it would not hold an ounce of water. The stone was apparently adherent to the bladder, and was dislodged with difficulty. The incision was one and a half inches in length. The man did well. There was no sloughing at all, and he went home in two months. Dr. Hearn stated that, if he again should find it necessary to make so large an opening in the bladder, he would suture it, with the exception of an opening large enough to admit a catheter. The procedure would promote recovery. The stone weighed 970 grains.

The second patient was a colored man, sixty-eight years old, who had for four years complained of pain in the supra-pubic region. With this there were frequent

micturition and the usual symptoms of stone in the bladder. When the sound was passed, it seemed as though there was one large stone. A short supra-pubic incision was made, and a small stone removed. It became evident that there were several stones present. In all, five were removed. Their combined weight was 243 grains. The man left the hospital perfectly well ten days after the operation, a demonstration of the advantage of a small incision into the bladder. Dr. Hearn stated that he had been opposed to the supra-pubic method, but he was much gratified at his experience with it. He considered the operation easy of performance.

In the discussion, DR. JOHN B. DEAVER stated that in a case operated upon by him a persistent fistula followed nephro-lithotomy, so that it became necessary to perform lumbar nephrectomy. Both operations were successful—complete recovery ensuing. The question that arose was whether the fistula communicated with the kidney or with the ureter. At the second operation the kidney was found intact, the site of the incision having granulated and the contour of the organ having been restored. The fistula communicated with the ureter immediately below the pelvis. The ureter was probably injured during the primary operation. Dr. Deaver added that he had performed nephro-lithotomy in two other cases, both of which recovered without any trouble. He did not agree with Dr. Hearn with reference to shock. In neither case was there any considerable shock. Not much blood was lost, which would have an important bearing upon the degree of shock.

Dr. Deaver thought that Dr. Hearn's method of proceeding in extracting the stone was much better than that which he had adopted, and that which is generally adopted—namely, tearing into the kidney with the finger or grooved director. It is probable that if, in the case especially referred to, a free incision had been made and the stone removed, there would have been less likelihood of a fistula following.

Dr. Deaver related that a short time previously he had operated upon a man, seventy-five years old, who had a piece of catheter in his bladder. The man had for some years been in the habit of passing a rubber catheter, and, the instrument becoming brittle, a piece had broken off in the bladder. The catheter was removed through a supra-pubic opening; this was followed by a good deal of sloughing, which, in an old man in whom the vitality of the tissues is low, may readily occur.

Another question that arises in these cases of long-standing obstruction, with damming of the urine back upon the kidneys, is whether ether or chloroform is the safer anesthetic. Dr. Deaver believes that, under such circumstances, chloroform is the safer. He had recently operated on a man, seventy years of age, who was daily passing but nine ounces of urine, which contained an abundance of granular casts. In this case he administered chloroform, and no bad symptoms followed. The patient is now passing twenty ounces of urine daily. Dr. Deaver stated that, in his experience with supra-pubic cystotomy for drainage in case of large prostates in men advanced in life, those who die die from a slow form of uremia. That ether may cause congestion of the kidneys was clearly demonstrated a short time before in a case of radical cure for hernia in a young man in whom the urine was perfectly normal. For some hours after the operation the man passed bloody urine and presented the symptoms of congestion of the kidney. If the normal kidney will thus suffer from the effects of ether, the abnormal kidney will probably suffer still more.

The PRESIDENT stated that a number of years ago he had written a short paper entitled "Are the Kidneys Active Eliminators of Ether?" Since that time he has on several occasions had the opportunity of applying a flame to the urine passed by patients undergoing etherization, with the production of a flash of burning ether. That ether thus passes off by the kidneys is a great element of safety in these cases. When there are evidences of renal disease, it may perhaps be safer to give chloroform.

Whether the kidneys eliminate chloroform also Dr. HUNT did not know, but the quantity at best must be very small. The case that first attracted his attention to the subject was a patient brought into the Pennsylvania Hospital with a recent accident-wound necessitating amputation of the arm. Ether was administered, but the pulse almost stopped; the etherization was discontinued, and the operation was postponed. In the afternoon the etherization was resumed, but the same effects occurred. Then the operation was performed without etherization. The patient presented the ordinary symptoms of what is called surgical fever. The urine was albuminous. The man died, and at the autopsy the kidneys were found absolutely disorganized by old disease. From this association Dr. Hunt was led to believe that probably the kidneys serve to eliminate the excess of ether and thus save patients from the injurious effects of the anesthetic.

DR. J. EWING MEARS stated that another point in connection with the administration of ether to elderly persons as well as to children that should be considered is the tendency of ether to induce irritation of the bronchial mucous membrane.

DR. L. W. STEINBACH stated that in his experience renal calculi are usually branched in outline, conforming to that of the calices of the kidney, and thus occasioning great difficulties in removal. Some three years ago, in a case upon which he operated by abdominal section, he found the difficulties in the removal of the stone insurmountable and was compelled to remove the entire kidney. There were several stones, and most of them were branched. He did not remember ever seeing a round stone come from the kidney.

In concluding, DR. JOSEPH HEARN added that he had seen two cases of exploratory incision into the kidney, without great loss of blood, in which the shock was profound, although the patient rapidly rallied.

It has long been recognized that ether is not safe when the kidneys are in such a condition that the anesthetic is not rapidly eliminated. In many cases of death occurring within twenty hours after operation ether has probably been the cause of the fatal result. Dr. Hearn expressed a preference for chloroform, and stated that he administered it often in private practice. It can be given safely, and is to be preferred whenever the kidneys are not in good condition. It is remarkable that more deaths do not occur in urgent cases in which there has not been time to examine the urine.

CORRESPONDENCE.

ROME.

Fourth Italian Congress of Internal Medicine.

THE fourth annual meeting of the Italian Society of Internal Medicine was opened in the "Aula Magna" of the University on October 19th, and continued four days. Some two hundred physicians were present, and although the attendance was smaller than was expected, it made up in quality what it lacked in quantity, for the ablest clinicians and physicians in Italy took part in the Congress.

The number of papers read was so large that it would take too much space to mention all; hence I shall only speak of the reports handed in and read by the members appointed last year.

The proceedings were opened by an eloquent and effective address by the President, Professor Baccelli, which was followed by the reports of Professors Rossoni and Forlanini on the "Pathology and Treatment of the Diseases of the Stomach." Professor Rossoni's report may be summed up as follows:

1st. The modern studies as to the quantitative variations of free HCl in the gastric juice in the various diseases of the stomach have not given decisive results in aiding the diagnosis of the diseases of the stomach.

2d. The conclusions reached by Hayem and Winter in their studies on gastric chemistry are premature. The creation of various "chemical" types of dyspepsia cannot have the importance that some have ascribed to it.

3d. The tendency manifested by the modern French authors to regard the various disturbances of gastric chemistry as morbid entities adds complications to practical medicine.

4th. Despite the progress in modern chemical and functional analysis of the stomach that has been made, the problem of the nature of dyspepsia has not yet been solved.

5th. It has not yet been satisfactorily demonstrated whether dyspeptic phenomena are dependent on chronic gastric catarrh or on gastric neuroses.

6th. The prevalent fashion of determining the chemical type of the dyspepsia leads to neglect of the study of the primary cause to which the dyspepsia is due.

7th. The classifications of gastric neuroses as found in modern works on the diseases of the stomach are useless.

8th. The gastric neuroses had better be described in treatises on diseases of the nervous system.

9th. Bouchard's doctrine of dilatation of the stomach is not clear, and neglects important researches as to the causation of gastric dilatation.

10th. The greatest advance in the treatment of the diseases of the stomach that has been made since the adoption of gastric "lavage" has been the surgical treatment of such grave organic diseases as carcinoma, round ulcers, stenosis of the orifices, especially of the pylorus, and gastric perforation. The results thus far obtained are extremely encouraging.

11th. The intervention of surgical skill in the treatment of organic lesions of the stomach imposes all the more strongly on the physician the duty (1) to make an early and accurate diagnosis; (2) to acquire himself skill enough to perform the various operations required.

12th. The new method of Marino and Sutto for the determination of free and combined HCl in the gastric juice is an excellent substitute for the method of Hayem and Winter as regards simplicity, exactness, and the time necessary to make an accurate analysis.

Professor Forlanini, who followed Rossoni, spoke at length of the chemistry and chemical analysis of the stomach and its contents, with its variations in the different forms of disease.

A prolonged and lively discussion followed these papers.

On the second day the proceedings were opened by the reports of Professors Albertoni and Silvia on "Auto-intoxications." Professor Albertoni's paper was too long to be done justice by a brief *rêsumé*, but Professor Silvia's paper, while not so comprehensive, presents the substance of the subject in such a way as to allow of the following conclusions being drawn:

1st. The healthy organism, like the diseased one, is a continuous manufacturer of poisons, as is demonstrated by the toxic nature of human excretions.

2d. The human organism does not suffer from the presence of these poisons while the eliminative organs perform their functions in a physiological manner, or else when a sufficient quantity of oxygen is present to transform the toxic substances into innocuous products.

3d. Auto-intoxication causes those morbid phenomena due to poisons produced by the organism itself, as a result of its functional activity.

4th. The causes of auto-intoxication may be deficiency or excess of function.

5th. Among the principal conditions due to auto-intoxication are those produced by alterations in the functions of the gastro-intestinal tract—hence many nervous disturbances associated with certain forms of dyspepsia, certain gastric fevers, cases of tetanus and of cramps sometimes accompanying dilatation of the stomach.

6th. Asthma, cases of transient epileptiform paralysis, and cases of neuritis may also be developed by auto-intoxication.

7th. Neurasthenia may sometimes, but not always, be attributed to it.

8th. Diabetic, carcinomatous, and gastric coma are also due to auto-intoxication. In gastric coma the poison is generated in the gastro-intestinal canal, while in diabetic and carcinomatous coma, as in pernicious anemia, it is probably generated in the intimate structure of the tissues.

9th. None of the bodies studied until now can properly be said exclusively to give rise to auto-intoxication: neither acetone nor acetacetic acid; the theory of acid-poisoning in diabetic coma cannot be accepted.

10th. Among the substances that may cause auto-intoxication are peptoxine, organic bases (ptomaïnes and leucomaïnes); products of the aromatic series, such as indol, phenol, aromatic acids, etc.; lactic acid, ammonia, sulphuretted hydrogen, acetone, etc.

11th. Fatigue, excessive mental work, insolation, and starvation cause auto-intoxication by the exaggerated and abnormal formation of some of the products named,

which cannot be rapidly enough eliminated or transformed.

12th. The diagnosis of auto-intoxication depends principally upon the demonstration of the presence in the urine, feces, sweat, and in the tissues, of substances recognized as toxic.. From this point of view we have acquired positive and important means of diagnosis by testing the urine for sulphuric acid, phenol, indican, acetone, ammonia, diamine, the alkaloids, and peptones.

13th. The treatment of the phenomena of auto-intoxication, in addition to prophylaxis, calls for two things: 1st, the transformation of noxious into harmless products; 2d, the elimination and neutralization of these noxious products.

14th. The first is accomplished by the inhalation of oxygen or compressed air; the second, as the case may be, by emetics, purgatives, diaphoretics, massage, or disinfection of the gastro-intestinal canal. In some cases alkaline remedies are found useful.

The discussion that followed the reading of these papers, in which the foremost Italian clinicians took part, was of extreme interest, but would make this report entirely too long. Those interested in the papers and discussion in full can obtain the *Transactions*, which will be issued in about two months.

In the afternoon session of the second day some twenty short communications were presented. On the third day the reports of Professors Patella and Mya on "Jaundice" were read. Professor Patella proposed the following conclusions:

1st. Neither the "hemafecal icterus" of Gubler, the "urobilin icterus" of Gerhardt, nor the "bilirubin icterus" of Tessier can be sustained.

2d. Hematogenous icterus does not exist.

3d. Nearly all the forms of jaundice seen clinically come under the hepatogenous form by resorption.

4th. The mechanism of the production of some forms of icterus is very obscure—that is, the reasons *why* and *where* this biliary resorption takes place.

5th. The physio-pathological conception of so-called catarrhal icterus, as maintained in the past, is no longer sufficient to explain the actual mechanism of its production.

6th. The actual state of our knowledge of the bacteria of the intestinal canal and biliary passages does not authorize us to accept without reserve the infective origin of catarrhal icterus.

7th. Chauffard's idea of its toxic origin—modified in accordance with the results of biologic chemistry and experimental studies on icterus—must be taken into serious consideration in catarrhal icterus, and especially in certain cases of infective jaundice.

8th. Catarrhal icterus can be considered the first link of a chain which, starting from it, reaches to grave and lethal icterus. A plural etiology—a true multiplicity of pathogenic possibilities—must nowadays be given to infective jaundice.

9th. The "morbus Weil," though belonging to this group on account of its clinical aspects, even in the absence of bacteriological or pathological demonstrations, merits, however, a special place, as etiologically specific. Is it bacteric or toxic?

10th. Our present knowledge of biliary infection is incomplete and imperfect.

A large number of papers were read during the afternoon session, with some heated discussions.

On the fourth day a few papers were read, and the President, Professor Baccelli, delivered an able address, in which he pointed out the growing importance and influence of these meetings, and closed by inviting all the members to accompany him on the following day on a visit to the "Policlinico," which is now being built.

A special meeting for the election of officers was held, at which the existing incumbents were all reëlected.

The General Council announced the following subjects to be reported upon at the next meeting, to be held in October, 1892: "Rheumatism," "Cerebral Localization," and "Aëro-therapeutics."

A PLEA FOR HIGHER MEDICAL EDUCATION.

To the Editor of THE MEDICAL NEWS,

SIR: The following memorandum was sent with a patient by her attending physician to the resident physician of —— Hospital. I enclose the original for your instruction and delight.

Very truly yours, M. G. H.

— — — — New Jersey.
Co. ss.

—— —— —— —— ——

T,o, to, The head Doctor C—— Hospital, ——City, New, Jersey Feb, 2the 18,89, Mrs, H——, The wife of. Mr. H——, was born, In Mount.Gomry Co. Pa. The D, of. Mr, W——, C——, of. The said, County visited Mrs. S——, a——, H——, sycamore St.

{ Symptoms, Consumpitions,

Debility of. The LungS. Nervous, fever and A. Peculiar. dispositions of. The FluidS.

Secretions, of. The Kidneys &obstructionS of. a, tumor, Near, the Woumb,

—— —— —— ——

Registered alsow. In Camden Co New Jersey { A. Registered and Prescribing and, Compounding Physician.

—— ——,

NEWS ITEMS.

Dr. John H. Packard, of Philadelphia, has entirely recovered from a recent attack of severe illness, and is enabled to resume the duties of his practice.

BOOKS AND PAMPHLETS RECEIVED.

Four Operations for Appendicitis: Three Recoveries; One Death from a Very Small Concealed Abscess. By W. W. Keen, M.D. Reprint, 1891.

The Climate of Southern California in Relation to Disease. By William A. Edwards, M.D. Reprint, 1891.

A New Method of Tenotomy. By W. W. Keen, M. D. Reprint, 1891.

A Further Communication on a New Method of Compressing the Subclavian Artery. By W. W. Keen, M.D. Reprint, 1891.

A Case of Fracture of, and Dislocation between, the Tenth and Eleventh Dorsal Vertebræ, with Presentation of the Patient. By Alfred I. Bouffleur, B.S., M.D. Reprint, 1891.

The Operative Treatment of Appendicitis. By Thomas S. K. Morton, M.D. Reprint, 1891.

Trap Siphonage and Trap-seal Protection. By James M. Denton, M.E. Reprint, 1891.

Manual of Physical Diagnosis: for the Use of Students and Physicians. By James Tyson, M.D. Philadelphia: P. Blakiston, Son & Co., 1891.

Bald Heads. By Albert E. Carrier, M.D. Reprint, 1891.

A Clinical Report of Operative Surgery, in the Service of William T. Bull, M. D. By William B. Coley, M.D. Reprint, 1891.

A Treatise on Practical Anatomy, for Students of Anatomy and Surgery. By Henry C. Boenning, M.D. Illustrated. Philadelphia and London: F. A. Davis, 1891.

Records of the Association of Acting Assistant Surgeons of the United States Army. Edited by W. Thornton Parker, M.D., Recorder A. A. A. S. Salem, Mass.: Salem Press Publishing and Printing Co., 1891.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM NOVEMBER 10 TO NOVEMBER 16, 1891.

HALL, WILLIAM R., *Captain and Assistant Surgeon.*—Relieved from Fort Schuyler, N. Y., and assigned to duty at Angel Island, Cal.

CLENDENIN, PAUL, *Assistant Surgeon.*—Promoted November 5, 1891, to be Assistant Surgeon with the rank of Captain, after five years' service, in accordance with the Act of June 23, 1874.

FISHER, HENRY C., *First Lieutenant and Assistant Surgeon* (recently appointed).—Ordered to Fort Riley, Kansas, for duty.

SHAW, HENRY A., *First Lieutenant and Assistant Surgeon* (recently appointed).—Ordered to Fort McKinney, Wyoming, for duty.

DUNLOP, SAMUEL R., *First Lieutenant and Assistant Surgeon* (recently appointed).—Ordered to Fort Sill, Oklahoma Territory, for duty.

KIEFFER, CHARLES F., *First Lieutenant and Assistant Surgeon* (recently appointed).—Is assigned to duty at Fort Sheridan, Illinois.

MERRIWETHER, FRANK T., *First Lieutenant and Assistant Surgeon* (recently appointed).—Is assigned to duty at Fort Adams, Rhode Island.

TEN EYCK, BENJAMIN L., *Assistant Surgeon.*—Is granted leave of absence for one month, to take effect about the 15th inst.

MEARNS, EDGAR A., *Captain and Assistant Surgeon*—Is relieved from duty at Fort Snelling, Minnesota, and assigned to duty at Fort Mackinac, Michigan,

WILLCOX, CHARLES, *First Lieutenant and Assistant Surgeon.*—Is relieved from duty at Fort Bowie, Arizona Territory, and assigned to duty at Fort Gaston, California.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING NOVEMBER 14, 1891.

GATEWOOD, J. D., *Passed Assistant Surgeon.*—Detached from the U. S. S. "Despatch," and granted two months' leave of absence.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF MEDICAL OFFICERS OF THE U. S. MARINE-HOSPITAL SERVICE, FOR THE TWO WEEKS ENDING NOVEMBER 7, 1891.

VANSANT, JOHN, *Surgeon.*—To proceed to New Orleans, La., as Inspector, November 7, 1891.

MURRAY, R. R., *Surgeon.*—To rejoin station at Key West, Fla., October 30, 1891.

PECKHAM, C. T., *Passed Assistant Surgeon.*—To proceed to Memphis, Tenn., as Inspector, November 7, 1891.

GUITÉRAS, G. M., *Assistant Surgeon.*—To assume command of Gulf Quarantine Station, October 30, 1891.

DECKER, C. E., *Assistant Surgeon.*—Assigned to duty at San Francisco, Cal., October 30, 1891.

APPOINTMENT.

DECKER, CHARLES E, of Michigan.—Commissioned as Assistant Surgeon, by the President, October 27, 1891.

TO CONTRIBUTORS AND CORRESPONDENTS OF THE MEDICAL NEWS.

THE MEDICAL NEWS begs its contributors and correspondents to observe the following:

1. Contributors of original articles, lectures, clinical memoranda or hospital notes, will, upon publication of their communications, be liberally paid, either

a. In cash, or

b. In reprints (250).

It should be distinctly stated, either at the head of the communication or in the accompanying letter, which method is preferred.

2. Copies or abstracts of papers must not have been or must not in the future be furnished any other journal, or published elsewhere, unless the fact have been clearly stated prior to the acceptance by us of the article. *Without an understanding to the contrary, it is held to be a matter of simple honesty that communications sent* THE NEWS *are for its exclusive use.*

3. The rejection of a manuscript does not necessarily imply any adverse editorial judgment as to its literary or scientific value. There are many other reasons that often prevent the acceptance of a manuscript. It may, for example, be rejected because another and similar article upon the same subject has already been accepted and awaits publication; because it could not be published for so long a time that it would become unseasonable; because it would more appropriately appear in some other journal, etc., etc. We cannot undertake to explain the especial reason for not accepting a paper.

4. The probability of the acceptance of an article, as well as the likelihood that it will be extensively read, is greatly enhanced by its brevity. Useless introductions and more useless perorations are always well omitted. Expression should be condensed; not so much as to exclude or to render obscure important things, but sufficiently to economize the time of the busy and tired practitioner and save mental friction in clearly comprehending the article. The results of good thinking, good observation, or good work, can be given in few words—and, with certain rare exceptions, it is results that medical men want.

5. THE NEWS especially desires brief, crisp clinical memoranda and short, concise articles on living subjects—articles epitomizing observations and facts occurring almost daily in the practice of every practitioner. A vast deal of material highly valuable to medical science and to humanity is constantly lost because busy men feel that they have not the time or ability to write elaborate papers. This is wrong. Everyone has some peculiar experience, sees exceptional aspects and phases of disease, has peculiar abilities or methods of practice, comes repeatedly upon a highly anomalous, suggestive, instructive, or interesting case. If such cases were properly placed on record, medicine would be greatly advanced. THE NEWS desires to become the medium of such publication and record.

6. Communications should be prepared in compliance with the following suggestions:

a. Paper larger than 8 × 10 inches should never be used.

b. The paper should be good, white writing paper, not news or tissue-paper.

c. If possible, a manuscript should be type-written.

d. Only one side of the paper should be written upon.

e. A blank margin, at least one inch wide, should be left at the left-hand side of the sheet.

f. Communications should be written in black, non-copying ink.

g. Writing, and especially all proper names, should be distinct and plain.

h. A sheet on which many corrections, interlineations, etc., have been made, should be rewritten.

i. If possible, manuscript should never be folded or rolled.

7. Communications in reference to subscriptions, advertisements, or other business should be addressed to the publishers, MESSRS. LEA BROTHERS & CO., 706 and 708 Sansom Street, Philadelphia. Communications pertaining to the reading columns should be addressed to the Editor:

GEORGE M. GOULD, M.D.,
1004 WALNUT STREET, PHILADELPHIA.